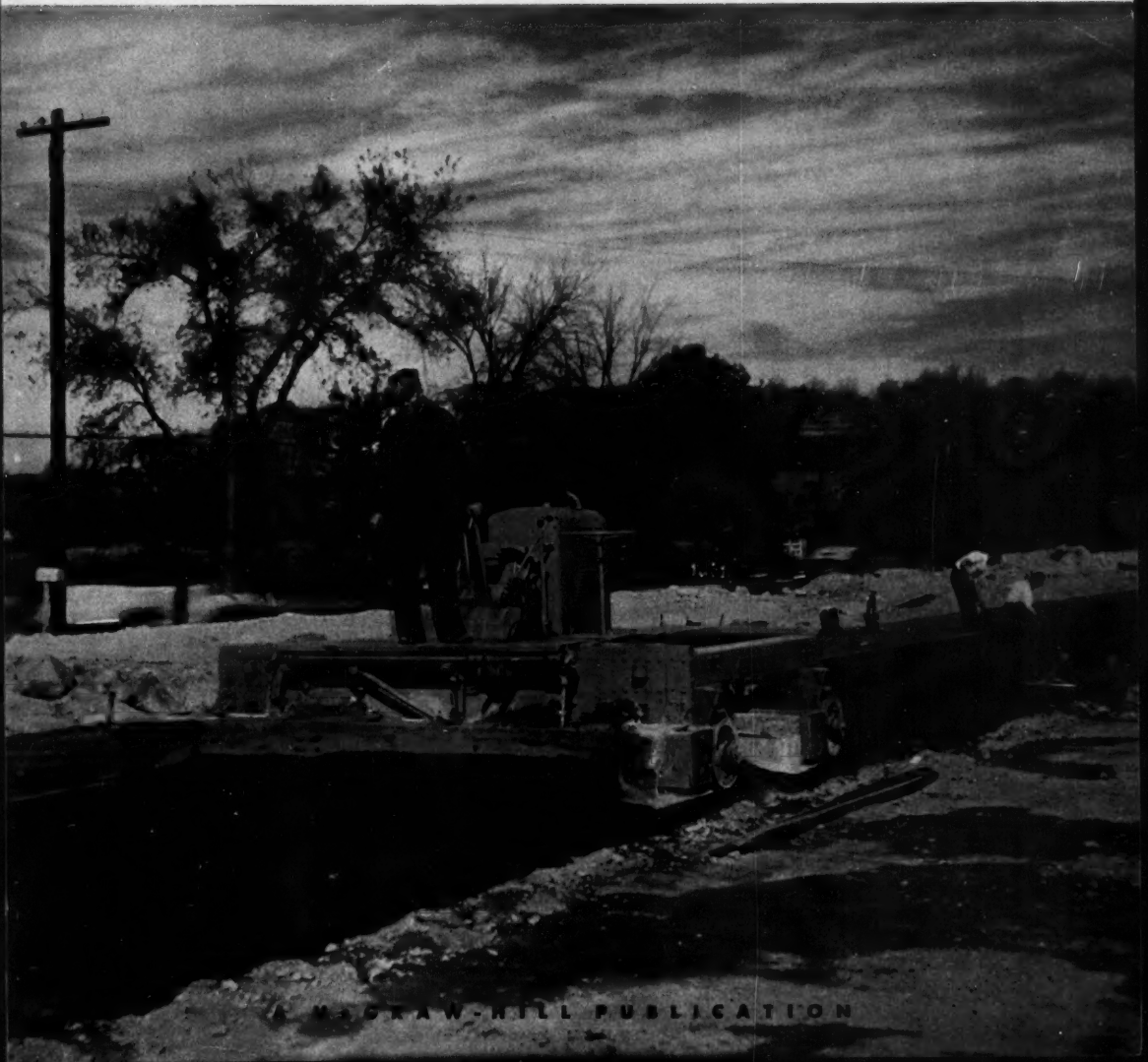


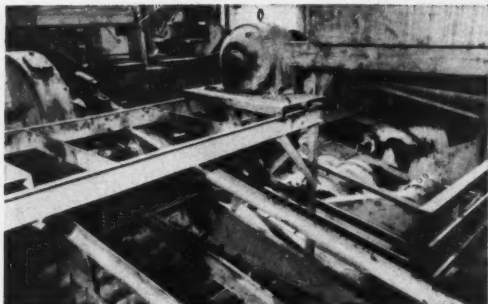
# CONSTRUCTION

## METHODS AND EQUIPMENT

May 1951



A MCGRAW-HILL PUBLICATION



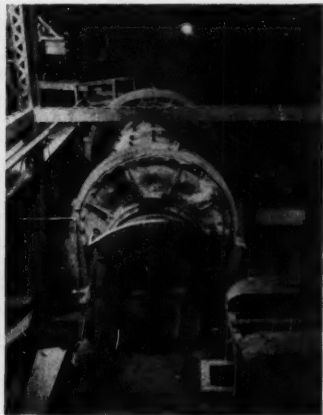
Aggregate under 6 inches is separated in shakers at screening plant. A G-E 5-hp motor drives shakers. Plant is completely automatic.



Carrying cement mix along this indoor conveyor system is a crucial step in construction of the dam. Sturdy G-E 100-hp motor drives the belt.



Aggregate for batching plant at Hungry Horse Dam is carried 1600 feet up the canyon wall by conveyor, driven by reliable G-E 100-hp motors in wooden sheds at intervals of 250 to 300 feet.



This Marcy rod mill, used in the gravel-crushing operation at the screening plant, is driven by a G-E 200-hp motor (right center). The motor is protected against heavy dust.

## push-button aggregate processing at 700 tons/hr.

# ...Electrically

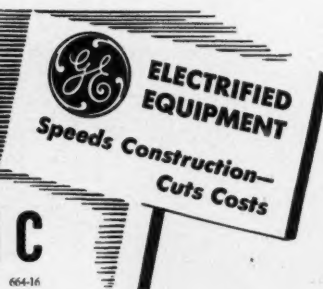
General-Shea-Morrison, contractors for the Bureau of Reclamation's Hungry Horse Dam, are going all-out with electric equipment. Best example is their aggregate plant with its network of interconnecting conveyors geared to process 700 tons of raw aggregate every hour. It's one of the most modern installations of its kind in the country—strictly a push-button operation from raw aggregate handling to mixing. Only with modern electric drives can this world's fourth largest dam be completed on schedule in 1952.

As time goes on, contractors are discovering more and more that it pays to electrify. With co-ordinated use of G-E motors and control and G-E power-distribution systems; they're getting safer, more flexible, and more efficient operation. Apparatus Department, General Electric Company, Schenectady 5, N.Y.

*Ask him Today!*

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.

# GENERAL ELECTRIC





RESEARCH KEEPS

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FIRST IN RUBBER



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*Gives 2 to 6 times greater impact resistance*

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**Cord belt stands more impact**—Each lengthwise cord in a B. F. Goodrich cord belt is completely surrounded by rubber—no cross threads tie them together. Cords are free to "give" when impact occurs. Rubber distorts temporarily, distributing and absorbing a shock that would damage stiff, unyielding plies. As an extra protection, B. F. Goodrich has added a patented *Transcord Breaker*—an extra layer of parallel cords in rub-

ber, placed across belt width. Acts as a shock absorber, stretches to prevent gouges and cuts from splitting belt cover.

**Cord belt troughs better**—There being no crossweave in the cord plies, cords are free to flex. Belt conforms to idlers, pulleys. Spillage is reduced, troughing is natural and belt keeps centered on idlers, sustains less damage, requires less maintenance. Longer centers, higher lifts can be used.

**Cord belt at work**—A B. F. Goodrich cord belt at this rock plant travels from pit to crusher under a highway and two sets of tracks, yet

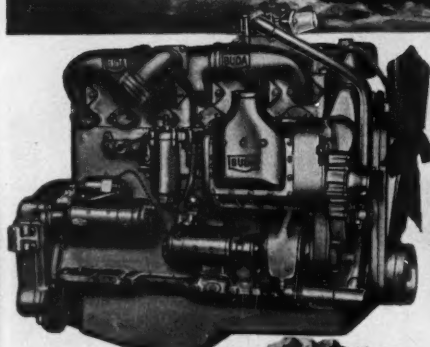
delivers 1,000 tons of rock and sand an hour without spillage.

The first B. F. Goodrich cord belt ever made is still on the job after 12 years and 14 million tons of rough-riding coal. If rock, coal, sand, gravel, ore or any other material rough-rides your conveyor, you can save money by calling in your local BFG distributor. The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.

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RUBBER FOR INDUSTRY



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# CONSTRUCTION

## METHODS AND EQUIPMENT

Volume 33, Number 5

MAY 1951

Established 1919

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Vol. 33—No. 5

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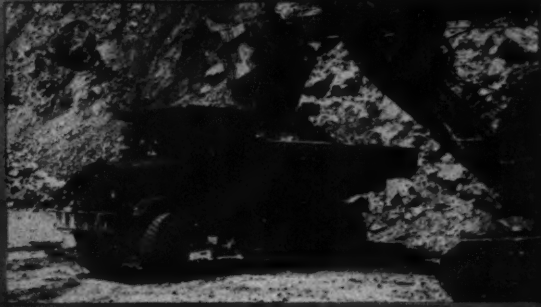
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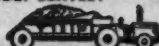
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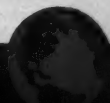
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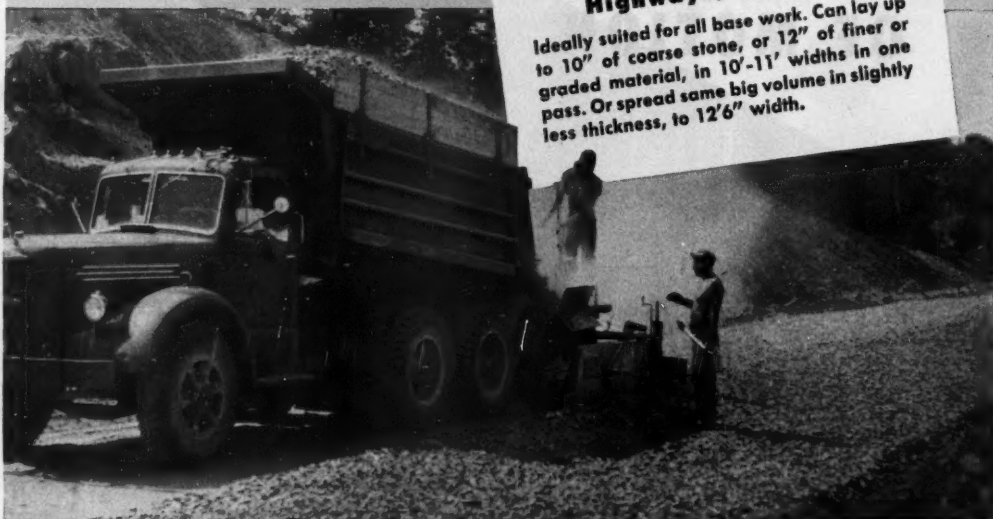
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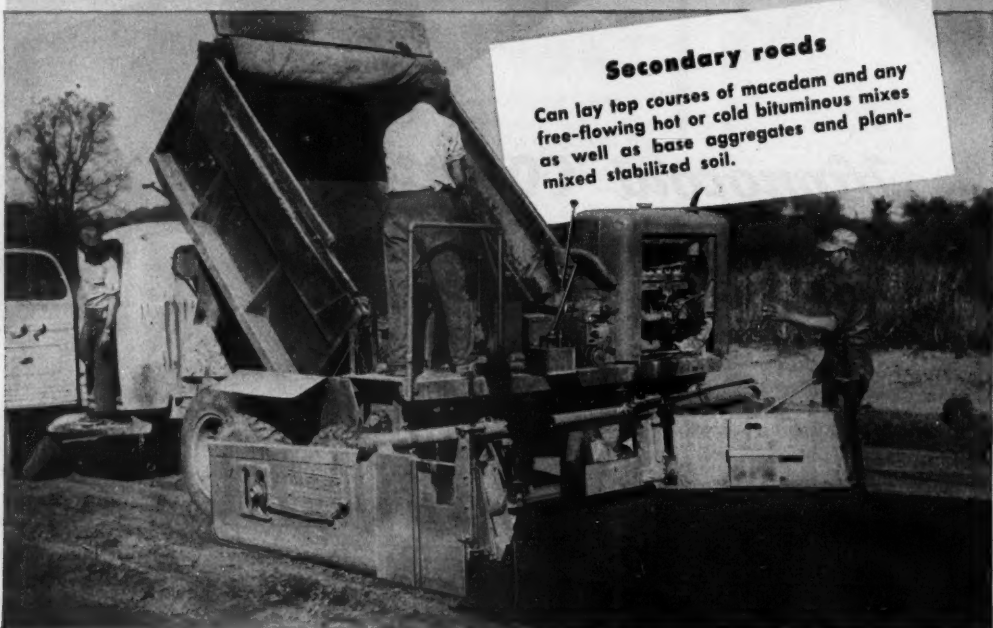
## **Highways, Airports**

Ideally suited for all base work. Can lay up to 10" of coarse stone, or 12" of finer or graded material, in 10'-11' widths in one pass. Or spread same big volume in slightly less thickness, to 12'6" width.



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Can lay top courses of macadam and any free-flowing hot or cold bituminous mixes as well as base aggregates and plant-mixed stabilized soil.



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Can lay up to 12" thickness in widths to 11'; slightly less thicknesses to 12'6" width. Two spreaders can lay full 25' width on fast work.

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Can lay flush to curbs or headers, blend perfect joints. Two models—to work with any size trucks up to 24-ton semi-trailers.



**Small contractors use on parking areas and drives**

This simple, low-cost spreader does a beautiful job, fast and with big saving in labor. See your Jaeger distributor.



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• Contractor's lubrication truck servicing equipment on road-building job in Oregon. Texaco products are used exclusively . . . *Texaco Ursa Oil X\*\** for engine lubrication, *Texaco Marjak* for chassis lubrication, *Texaco Marjak Heavy Duty* for wheel bearings, *Texaco Track Roll Lubricant*, and others.



# KEEP YOUR EQUIPMENT

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See newspaper for  
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# TEXACO





# ON THE JOB

**M**AINTENANCE costs and fuel consumption both come down when you lubricate engines—Diesel or heavy-duty gasoline—with *Texaco Ursa Oil X\*\**. In addition, you'll get full power . . . more work and less downtime.

*Texaco Ursa Oil X\*\** is the fully detergent and dispersive oil with extra resistance to oxidation. It cleans as it lubricates . . . keeps rings free for proper compression and combustion. *Texaco Ursa Oil X\*\** stands up in the severest service . . . protects bearings from corrosion . . . assures longer parts life.

#### Use These Other Cost-Reducers, Too

To bring down chassis maintenance costs, use *Texaco Marfak*. It's longer lasting—won't jar or squeeze out of bearings. Protects against dirt, rust and wear. *More than 400 million pounds of Marfak*

*have been sold!*

Assure longer wheel-bearing life by lubricating with *Texaco Marfak Heavy Duty*. It stays in the bearings, off the brakes. Greater safety—no seasonal change required.

Guard crawler track mechanisms against dirt, water and wear by lubricating with *Texaco Track Roll Lubricant*. Reduces maintenance costs.

Let a Texaco Lubrication Engineer show you how you can reduce costs with Texaco lubricants and the Texaco Simplified Lubrication Plan calling for only six lubricants to handle all major requirements. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

## Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

# Freedom to work *"IN THE DRY"*

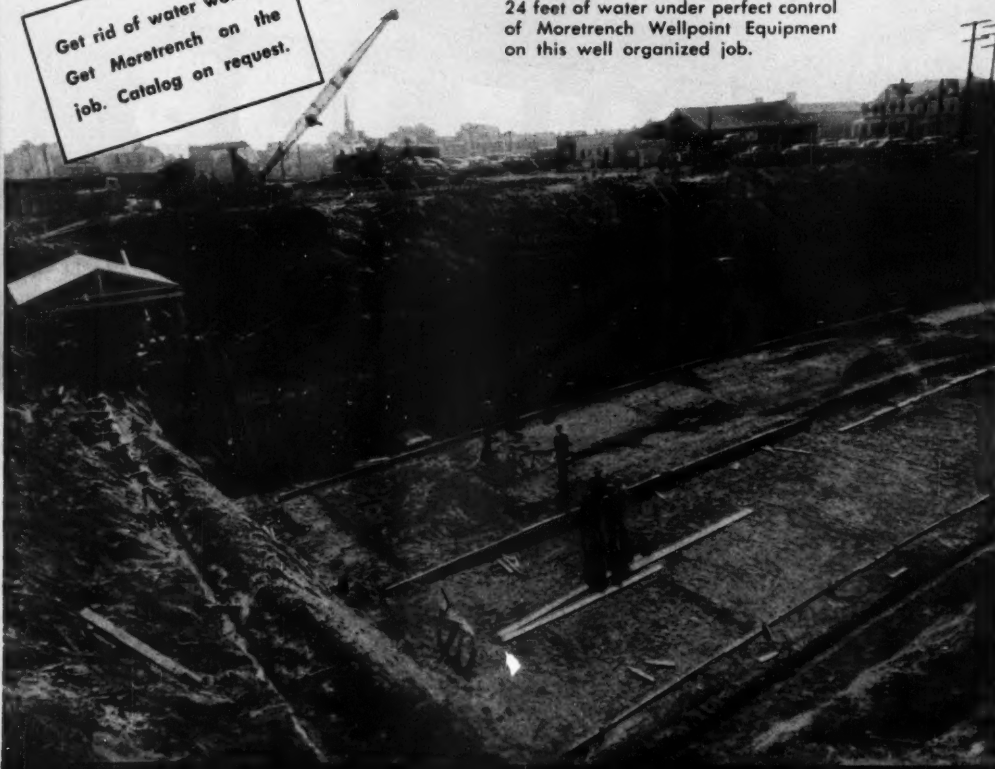
*... another reason why a MORETRENCH  
WELLPOINT SYSTEM is the preferred  
way to solve a pumping problem.*

It guarantees your freedom —

to *work* unhampered by water  
to *excavate* by whatever method you choose  
to *progress* as fast as you can  
to *save* while you're doing it.

Get rid of water worries.  
Get Moretrench on the  
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# Construction Men LOOK UP TO...

## OWEN

*The Universally  
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## BUCKETS

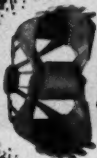


for MAXIMUM  
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for CAPACITY LOADS  
& PROPER  
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for RAPID, COMPLETE  
DISCHARGE OF  
ALL MATERIALS



*A mouthful  
at every bite*

• Yes, ON THE JOB, construction men all over the world are SOLD on OWEN BUCKETS for excavating, material handling, dredging, etc. Standardization on OWENS is common practice, but given wise practice.

If our catalog isn't in your files or on your desk, just drop us a line and we'll dispatch your copy to you promptly.

### THE OWEN BUCKET CO.

6020 BREAKWATER AVE. • CLEVELAND 2, OHIO

Branches: New York, Philadelphia, Chicago, Berkeley, Calif.

*Ask  
about*

**"KOEHRING**

**7¾ to 79½ TONS  
lift capacity**

**¼ to 2½ yards  
dipper capacity**





A black and white photograph of a large lattice boom crane lifting a heavy, dark object, possibly a piece of machinery or a large pipe, from a pile of earth. The crane's boom extends from the lower left towards the upper right. The background is a hazy, overcast sky.

# WORK CAPACITY"

*Before you buy  
SEE YOUR KOEHRING DISTRIBUTOR  
there's a BIG difference*

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# For LARGER PROFITS and BETTER RESULTS IN EVERY PHASE OF CONCRETE PAVING!

## HIGHWAY and AIRPORT

### JACKSON VIBRATORY PAVING TUBE

The JACKSON Paving Tube, which is quickly attached to any standard finisher, provides full width internal vibration through full depth of the slab. The harsher mixes are readily made plastic. Important savings in cement can be made, or important gains in compressive strength and durability achieved when no cement reduction is made. Spreading costs are reduced, finishing progress is much more rapid, complete compaction is accomplished and concrete is perfectly puddled at side-forms and joints. It is adaptable to slabs 6" to 24" thick and quickly adjustable from 10' to 25' widths, in the field. May also be attached to standard spreaders for vibrating the first course in thick slab construction. Write for complete details.

### JACKSON SIDE FORM VIBRATOR

Eliminates manual vibrating of concrete at side forms. Saves the better part of two men's labor. Mounts on any modern finisher, Jackson Vibratory Paving Tube or Spreader. Employs two or more vibratory units which are simultaneously lowered into or raised from the concrete by the finisher operator. Units operate close to forms or reinforcement, ride over any obstruction without fouling. Will not penetrate into sub-base. Assures thorough compaction regardless of speed of finisher, no spots missed. Long-wearing, trouble-free. Write for complete facts.

## MUNICIPAL PAVING - BRIDGE DECKS HIGHWAY WIDENING and PATCHING, etc.

### JACKSON VIBRATORY SCREED

Strikes off to any crown, undercuts at curb or side-form, works right up to and around manholes and other obstructions. With it center joints may be eliminated and full widths (up to 30') poured. Requires only two men on widest slab, due to strong tendency to propel itself. It's the only screed that can be rolled back on 4 rollers for second pass. Contractor has only to secure plank cut to proper length and crown to be set for any job. Powered by Jackson 1.25 KVA Portable Power Plant. Most productive, most versatile of all screeds. Write for details.

**VIBRATORS for every type of concrete construction FOR SALE or RENT at your Jackson Distributor.**

**ELECTRIC TAMPER & EQUIPMENT CO.**  
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# LAND CLEARED for Highways . . . Powerlines


by

# FLECO

ROOT RAKE

ROCK RAKE

DETACHABLE STUMPER



A DIESEL D8, equipped with a FLECO ROCK RAKE, owned and operated by the Roy M. Jensen Construction Co., Salt Lake City, Utah, building a highway in the Mirror Lake section. The ROCK RAKE was ideal for removing rocks and leaving the dirt fill.

**SAVE**

**MONEY  
MANPOWER  
TIME  
TOPSOIL**

**DEMAND THE BEST  
DEMAND FLECO**

VISIT YOUR CATERPILLAR DEALER—HE HAS  
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MANUFACTURERS OF THE *Fleco* ROCK RAKE, ROOT RAKE AND DETACHABLE STUMPER

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TELEPHONE 4-0661

Another Blaw-Knox Package of MultiFoote DueMix Paver, Blaw-Knox Read Form, Blaw-Knox Spreader and Blaw-Knox Finisher. The contractor is John Arborio, Inc., of Poughkeepsie, N. Y., paving Taconic Parkway.

## MULTIFOOTE brings you the VALUABLE advantages — features that mean money!

- The widest skip on any paver — reduces spillage, lost time, and tire damage.
- Simple skip hoist design — only one hoist rope with direct lift that reduces end thrust on skip hoist shaft.
- Large water discharge pipes that put the water in the drum fast.
- Double Cone Drum — scouring, cleaning, mixing action — no corners to build up — easy to clean.
- Plenty of engine power.
- A real HighLift Boom puts loads where you want them, eliminating a crane and reducing handling.
- High operating platform assures easy visibility and faster operation.
- Simple design and ease of adjustment reduces "down time" and assures easy upkeep.

THESE are just a few of the things that are behind MultiFoote output records. You owe it to yourself to get the entire story before buying your next paver.

Let us send you details.

**THE FOOTE COMPANY, INC.**

Subsidiary of Blaw-Knox Co.

1910 State Street

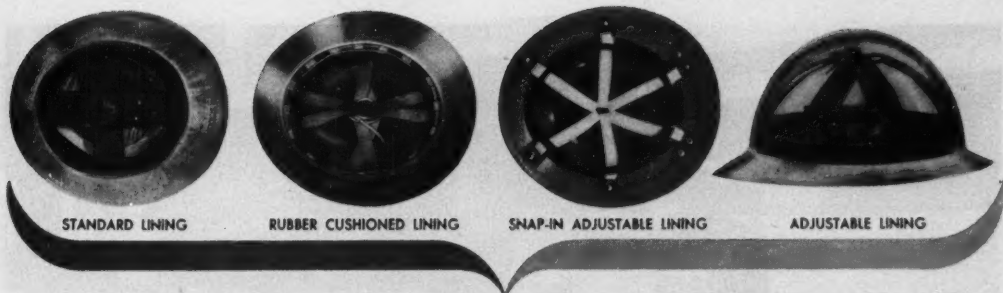
Nunda, New York

# MULTIFOOTE PAVER

FOR EVERY PLACE CONCRETE MUST BE POURED







Here Are Some Good Things . . .



## TO KEEP UNDER YOUR HAT!

Getting the lining that *feels right and stays right* is essential to your wearing comfort and safety. And you'll find the easy-fitting, comfort you're looking for in any one of these M.S.A. Skullgard linings:

**Standard—4 Cradle Lining**—Available in individual head sizes. Standard lining for all Skullgards.

**Rubber Cushioned Lining**—Durable sponge rubber pads, spaced between the sweatband and shell hold the Skullgard securely on the head without excessive pressure. Comes in  $\frac{1}{8}$  sizes from 6 to 8.

**Snap-In Adjustable Lining**—Easily adjustable to fit any head size. Replaceable in the field in seconds. Reduces stock inventories.

**Adjustable Lining**—Adjusts to exact head size. Uniform, comfortable fit all around the head. No pressure points. Perfect balance.

You'll find too, that M.S.A. linings are designed for maximum head ventilation. And the strong webbing in the crown is added protection against falling objects because it minimizes and distributes the force of the blow. You have your choice of leatherette or genuine leather sweatbands.

Remember too, that M.S.A. Skullgards have that rugged strength and durability that gives you dependable head protection and long service. Write for Bulletin No. DK-15.

### **MINE SAFETY APPLIANCES CO.**

BRADDOCK, THOMAS AND MEADE STREETS • PITTSBURGH 8, PA.

*At Your Service*

54 BRANCH OFFICES IN THE UNITED STATES AND CANADA





## Five hundred trucks can't be wrong!



Here are just two of the five hundred big trucks operated by the Midwest Transfer Company—headquarters in Chicago. It's a big job keeping this fleet in top working order, but according to Syd Kramer, an official of this company, STANOLUBE HD Motor Oil helps a lot. Here's what he reports:

"We have used STANOLUBE HD Motor Oil exclusively in our fleet of five hundred trucks for over five years. In that time, our maintenance costs have been very low due to the long periods between any necessary overhauls on motors.

"With this oil many of our engines have operated 85,000 miles without a major overhaul. We attribute this highly satisfactory performance to your STANOLUBE HD Motor Oil and are happy to recommend this oil to all fleet owners."

Mr. Kramer's experience is typical. Fleet operators throughout the Midwest have discovered the benefits offered by STANOLUBE HD under severe conditions—

high temperatures, heavy loads, or low temperature, intermittent operation. A trial will convince you. Take advantage, too, of Standard's automotive engineering service and Standard's widespread supply points.

To put STANOLUBE HD Motor Oil to work in your fleet, phone your local Standard Oil office, or write: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

### STANOLUBE HD

REG. U. S. PAT. OFF.

### Motor Oil

**STANDARD OIL COMPANY (INDIANA)**



**THIS CUSTOMER CHOSE...  
LORAIN "TL" on CRAWLER**



**THIS CUSTOMER CHOSE...  
LORAIN "TL" on RUBBER**



See Your Distributor for Full Facts

**...and got these Features**

- Two travel speeds in both directions (standard). • Drop forged treads—stronger, longer life. • 4-way ratchet and pawl tread and travel lock. • "Full-circle" steering with turntable in any position. • Oil-enclosed propelling mechanism—runs in oil bath. • "Packaged" propelling mechanism—removable as a unit. • Drop forged rollers—wearing surfaces heat treated. • Rust-proof tread adjustment—no rust, bind or freeze. • Choice of 3 crawlers—standard, extra long or wide gauge.

**...and got these Features**

- 8 forward speeds—1 to 33 m.p.h. • Carrier built specially for shovel-crane duty. • Multiple tires for soft ground flotation. • Patented equalizer beams eliminate rear springs. • Heavy-duty air brakes. • Choice of 4 or 6 wheel models—2 or 3 axles. • Choice of 4 or 6 wheel drive. • Built by the originators of rubber-tire cranes. • Choice of 15 or 10 ton capacities. • Extra-wide track units for maximum lifting capacity on rubber. • Single-engine, Self-Propelled models also available.

**BOTH CHOSE THESE  
FEATURES**

**TL**

- A modern idea in Turntable design—with these features:
- A complete package, all essentials included, no extras to buy
- Interchangeable "packaged" components—such as engine, clutch shaft, cab, etc.—individually removable and interchangeable
- 5 identical clutches with interchangeable parts
- A one-piece, all-welded, all-steel turntable bed
- Oil-enclosed cut gears
- Interchangeable parts
- Anti-friction bearings

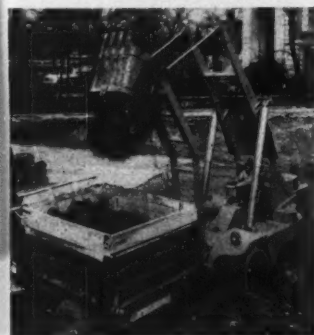
... plus many more your Thew-Lorain Distributor will point out in action. Ask him for a "TL" job visit!

**THE THEW SHOVEL CO., LORAIN, OHIO**



THE DEMPSTER-DIGGSTER, Type GRD, same as the one that loaded 600 tons of stone recently, has a 15 foot six inch turning radius, is 20 feet long when bucket is in traveling position, and bottom of bucket

is nine feet three inches above ground when in extreme dumping position. It will dig 15 inches below grade and through a 15 foot bank.



THIS DEMPSTER-DIGGSTER, Type HL, is specially equipped for high dumping. The bottom of the bucket is 13 feet six inches above ground. It will dig through an 18 foot bank.



FOR FAST, EFFICIENT operation in difficult terrain, the Dempster-Diggster is available with crawler-type traction.

## Fast Automotive Shovel Loads 600 Tons of Stone in Half a Day

**CONTRACTOR REPORTS: HYDRAULIC CROWD, HOIST UNIT "FILLS LONG NEEDED PLACE IN OUR INDUSTRY"**

THE DEMPSTER-DIGGSTER, a revolutionary shovel loader, recently loaded 600 tons of broken stone in the first half day of operation. This outstanding performance was reported to Dempster Brothers, Inc. by W. E. Lambert, president of Lambert Brothers, Inc., one of the nation's largest crushed stone contracting firms.

"In connection with our extensive activities in several southern states," the contractor said, "we have used various types of power shovels and front end loaders. After seeing the easy operation of the hydraulically operated Diggster in a demonstration we had made alongside of a competing loader, we placed an order with you. We installed the Diggster equipped with a yard and half stockpile bucket on one of our operations in western North Carolina.

"Our records show," he continued, "that the unit loaded approximately 600 tons of broken stone in the first half day of operation. The Diggster has been working continuously and is giving perfect satisfaction. It is a pleasure for us to so advise you because in our opinion the Diggster fills a long needed place in our industry. We welcome you to bring

any interested parties to our operation to see the Diggster in action."

The tremendous speed of the Dempster-Diggster in excavation and stockpile work is accounted for, mainly, by its exclusive independent hydraulic crowd and hoist action, the hydraulic steering, and wheel-type traction, which permits truck speeds to and from jobs. The power crowd permits bucket to keep digging until loaded . . . no digging with wheels. The hydraulic steering gives the driver easy, fast, finger-tip control.

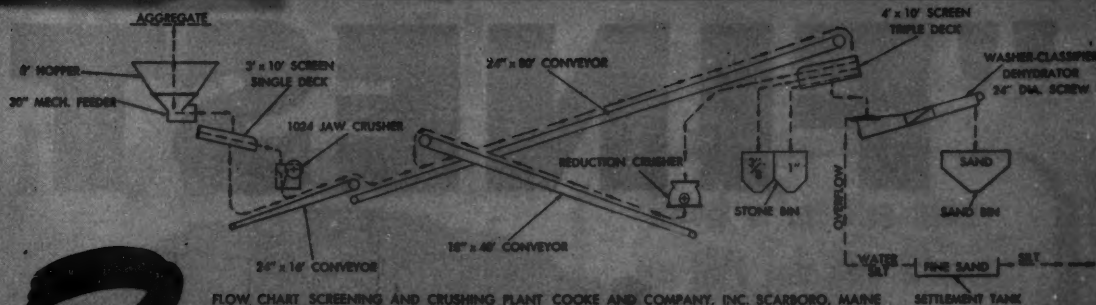
Four standard interchangeable buckets of two types are available. Digging buckets with four bottom teeth in 1 and 1 1/4 cubic yard (heaped) capacities; materials handling buckets in 1 1/2 and 2 cubic yard (struck) capacities.

Complete information and prices may be obtained by writing the manufacturer, Dempster Brothers, Inc.

**DEMPSTER  
DIGGSTER**

**DEMPSTER BROTHERS**  
351 SHEA BUILDING  
KNOXVILLE 17, TENNESSEE





# 3

## Times the Production

*at less than HALF the cost*



Over-all view of plant from discharge end. Truck in foreground is receiving load of washed sand from sand bin.

Close-ups of primary crusher, screen and feeder.



At the left, three-deck screen over two-compartment stone bin. At the right, sand-classifier-washer-dehydrator over sand bin.

That's the experience of Cooke & Company with their new Austin-Western crushing and screening plant. Cooke & Company operate large gravel and sand pits in Scarborough, Maine; sell concrete mix, asphalt mix, washed gravel and washed sand. The separation of aggregate into stone of two sizes—"peastone" and "buckwheat"—and washed silt-free sand is the principal operation.

In the words of A. C. Stanley, president of the company—

"Compared with our previous operation, we save two trucks and four men—a total of \$92.00 daily... are producing three times as much as before, at less than half the cost... quality of the gravel and sand produced has been very satisfactory... clean, carefully washed material is important when you want to obtain concrete that does not deteriorate."

Each Austin-Western plant is "tailor-made" for a particular production problem. Our engineering department will be glad to discuss yours.

**AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.**

Feeding and discharge ends of double-screw, 24" washer-classifier-dehydrator, which has a capacity of 120 tons per hour.



**Austin-Western**

# "FINEST



8' x 8' top opening gives big target... reduces spillover of rock and dirt of cut-off trench... saves shovel swings.



Tournahopper dumps riprap through wide 8' opening... then turns 90° to clear. Clearance is 22' under open doors.



**W. E. Logan & Sons** of Muskogee, Oklahoma, report their 2-year, 4,500,000-yd. contract on Tenkiller Ferry Dam across the Arkansas River near Gore is now well ahead of schedule. Main reason, say company officials, is the all-around, all-weather production ability of 3 LeTourneau 15-yard, bottom-dump C Tournahoppers.

The Tournahoppers have been used so far on 4 major types of work: (1) hauling sandy clay and gravel from conveyor belt loader, (2) hauling shovel-loaded, unshot rock from cut-off trench, (3) dumping rock fill in the coffer dam, and (4) placing riprap on the dam face.

## On 4500' haul... makes 8 trips an hour

When loaded by conveyor, each Tournahopper carries 12½ pay yards per trip... completes typical 9000-ft. cycles in 7.68 minutes. Hourly production on this haul averages 100 pay yards per machine, according to Contractor "Easy" Logan... combined output for the 3 rigs with loader is 300 yards hourly.

On cut-off trench assignment, now completed, the Tournahoppers moved approximately 80,000 yards of rock and 20,000 yards of moist dirt. Working under a 2½-yd. shovel, each "C" hauled 10 pay yards of mixed material per load... delivered 8 loads per hour on a 2000-ft. cycle

**Send NOW to: R. G. LeTOURNEAU, INC., Peoria, Illinois**

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

Type of work to be handled \_\_\_\_\_

- ☐ bottom-dump Tournahoppers
  - ☐ 19½-yd. ☐ 27-yd.
- ☐ rear-dump Tournashockers
  - ☐ 9-ton ☐ 18-ton ☐ 33-ton
- ☐ Tournapulls
  - ☐ 7-yd. ☐ 15-yd. ☐ 30-yd.



# all-around hauling units I've ever seen"

*says "Easy" Logan*



This is typical of the very soft haul footing being licked by Tournahoppers. Average time of 7.68 minutes on 9000' cycle includes .51 min. to load under conveyor, 1.01 min. to get on and off soft fill, and 17 min. to spread. Haul speed averages 17 m.p.h.

despite soft, slick roads which held haul speeds well below normal. Combined output here averaged 240 pay yards per hour for the 3 rubber-tired rigs.

When heavy rains made these two sections impossible to work, the 180 h.p. Tournahoppers moved onto riprap placement where moisture control was no problem. In 4 months, the 3 "C's" windrowed 22,000 cubic yards of rock... much of it handled under weather conditions which stopped all other haul units. Operating efficiency for the Tournahoppers in 800 hours of work has been 95%. No wonder Mr. Logan claims they're "the finest all-around hauling units I've ever seen."

## Has 11 electric rigs on dam

In addition to the 3 Tournahoppers, Logan, a LeTourneau equipment user since 1936, has 8 electric-control Tournapulls at Tenkiller Ferry Dam... 3 new 13.5-yd. "C's" and 5 big 30-yd. "B's". All 11 units were driven to the job site over paved highways from the nearest railroad.

NOTE... new C Tournahoppers have capacity of 1 1/2 yds., 30% greater than machines described here. Constant-mesh transmission, torque-converter, and 210 h.p. engine also are now available on orders for the "C" prime mover.

## Read what the men on this job say about **TOURNAHOPPERS**

**E. E. Logan, Partner**... "Our C Tournahoppers have paid for themselves on this one job. No other machine could have handled the riprap and rock work in the cut-off section without costing us too much money. The Tournahoppers have withstood this rough work much better than any other type of hauling unit would have done... Tournahopper's electrical system is far superior to other power methods used to operate hauling and scraper units, with much more positive control. We can operate the machines better, maneuver better, and work in footing conditions where other units cannot be used... As far as I'm concerned, the C Tournahopper is very satisfactory for all types of haulage conditions and materials and I recommend it very highly."

**A. C. Logan, Partner**... "These Tournahoppers are very maneuverable and work well under both loader and shovel. The machine works much better on soft fills than 4-wheeled front-end hauling units. Its electric steer is a big help in tough conditions."

**Charles Wills, Shop Foreman**... "The upkeep and maintenance on the C Tournahoppers has been less than on any other hauling machine we've ever used... and much less than the upkeep and maintenance on the other type hauling units we've been running with the Tournahoppers. The 'C's' electrical system has my vote as the best way of operating any dirtmover. It's easy to work on, and the machines can do things no other type of unit could even start to do."

**Ed Brown, Asst. Shop Foreman**... "Mechanically, these machines have been just about perfect. Have had very little down-time for any reason. The electrical system has been 100% efficient. I'd rather work 10 to 1 on the C Tournahopper or C Tournapull than on any other type of hauling unit used on our job."

**Robert Wright, Operator**... "I like these machines because they handle so easily... it's the easiest-operating rig I've ever been on."

**A. C. Kirk, Operator**... "You can turn the Tournahopper on a dime."

**Perry Johnson, Operator**... "We work these rigs in places you could hardly get a mule through."

**J. R. Cato, Operator**... "I can position my Tournahopper under the loader quicker with this machine. It sure is easy to handle."

Tournacker, Tournahopper—Trademark  
Tournapull, Carryall—Trademark Reg. U.S. Pat. Off. C145

# LETOURNEAU TOURNAHOPPERS

PEORIA, ILLINOIS

HIGH SPEED ON RUBBER PLUS TRACTION ADVANTAGES OF A CRAWLER



be sure you see Ingersoll-Rand's  
**NEW 600-cfm**  
**PORTABLE COMPRESSOR**  
 with GYRO-FLOW rotary compressor



operates  
 two of the new  
**FM-3**  
Wagon Drills



... AN IDEAL DRILLING COMBINATION.

JACKHAMERS • PILE DRIVERS • WAGON DRILLS • STATIONARY COMPRESSORS • CARSET JACKBITS • IMPACTTOOLS • MOTORPUMPS • QUARRYMASTER DRILLS

The new GYRO-FLOW 600 is the first portable ever to use a rotary compressor. It is of an advanced-design two-stage, oil-cooled, rotary type which eliminates valves, pistons, con rods, and clutch. A remarkably low oil consumption is maintained throughout the life of the compressor. Maintenance problems are almost entirely eliminated and hourly operations costs are greatly reduced. The complete unit weighs only 9500 pounds ready to run.

Under normal operating conditions, the air is always less than 200° F as it leaves the compressor. It is always oil-free, too. The GYRO-FLOW delivers full 600 cfm at 100 psi ... enough for two of the new Ingersoll-Rand FM-3 Wagon Drills. It is equipped with the new *Air-Glide* Capacity Control ... the only stepless regulator that controls the air output smoothly over the full range from 0 to 100% capacity.

The GYRO-FLOW is driven by the powerful Series 71 General Motors diesel engine. This six-cylinder, two-cycle engine has proven its stamina and reliability on contracting equipment, buses, locomotives and ships all over the world. Your nearest Ingersoll-Rand representative will be glad to give you the full story on the new GYRO-FLOW 600.

**Ingersoll-Rand**  
 11 Broadway, New York 4, N. Y. 602-2



**It's Lighter...  
It's Faster...It's Tougher**

It's the NEW  
**HOMELITE**

**ONE MAN  
Chain Saw**



**Pays for Itself  
in No Time  
Clearing Out  
Wooded Land**



It's a one-man saw that does the work of other two-man saws. Cuts an 18 inch tree in 16 seconds. Cuts trees 48 inches or more in diameter. Has simple, safe controls; automatic clutch; automotive type carburetor; rainproof magneto and chrome-plated, perma-sharp, narrow kerf chain.

**27 Pounds  
4 Horsepower**

**More Power Per Pound  
than any other saw**

Remember, you can't start any building or construction job until the location is properly cleared. And with this new Homelite One Man Chain Saw, you can do your clearing in less time . . . with less labor . . . and at less cost. It's the fastest cutting, easiest handling saw ever developed. And it's a rugged, dependable saw that needs less maintenance, fewer repairs, than any other saw.

Weighing only 27 lbs . . . and perfectly balanced, with most weight close to operator's body . . . a Homelite handles perfectly on all types of cuts. Any man can operate it easily. Send for new, complete bulletin.

**CARRYABLE**

**PUMPS • GENERATORS •  
BLOWERS • CHAIN SAWS**

PERFORMANCE • DEPENDABILITY  
**HOMELITE**  
CORPORATION  
SERVICE

1005 RIVERDALE AVENUE • PORT CHESTER, N. Y.

# Constructed to Take Severe Punishment

## Without Tube Swelling



### CONCORD #20 STEAM HOSE

Here's the steam hose with a structural difference that eliminates . . . once and for all . . . the common failure of tube swelling under continuous high pressure operation.

CONCORD #20 Steam Hose gives you the exclusive protection of a tough inner lining . . . a lining of stainless steel wire braid. This braid assures permanent retention of the original inside hose diameter. It prevents swelling and constriction of the tube . . . assures full flow of steam at all times . . . permits re-coupling in the field when necessary, without the slightest difficulty.

In addition, CONCORD #20 construction features include: two or three braids (depending on size) of alternate high tensile steel wire and rubber layers are firmly bonded over the outside of the tube. They provide maximum burst-protection and safety. An asbestos braid provides positive cover adhesion and serves as cover insulator. On top of all is the rugged, abrasion-resistant cover that withstands the severest abuse.

Flexible, tough and dependable . . . that's BWH's new CONCORD #20! Ask your nearby BWH distributor for a demonstration. Get in touch with him today, or write us direct.

### Tube Securely Locked by Special Stainless Steel Inner Wire Braid!

Illustration above shows how exclusive inner stainless steel braid of CONCORD #20 Steam Hose prevents tube swelling and assures long life under severe use.

Another Quality Product of

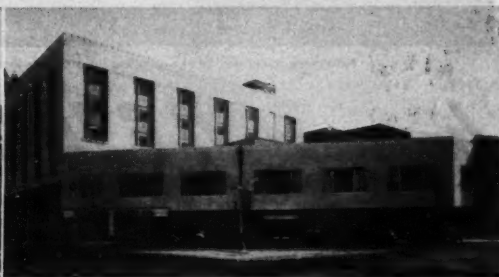
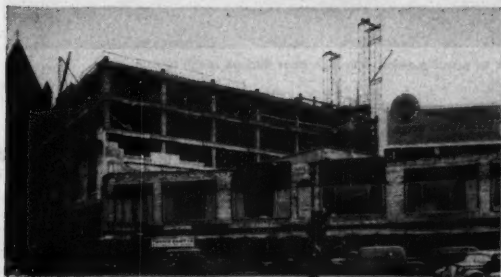
## BOSTON WOVEN HOSE & RUBBER COMPANY

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# 3 years— no down time



**E**VERY builder knows that if his hoist stops the job stops. That can mean mighty painful losses . . . in labor costs, time, and jammed-up operations. But Wm. Baumeister Construction Co. of St. Paul can tell you that hoist breakdowns are not necessary.

The job shown above—a new 6 story office building, plus refacing an older building—is a typically smooth Baumeister project. On this job and others, Baumeister has used Model 55 and Model 75 American General Purpose Hoists. In continuous use for 3 years, these hoists have *never lost a working hour for repairs.*

Take your choice of ten models, capacities from 600 lbs. to 40,000 lbs. single line pull. Your American Hoist distributor will help you get exactly what you need.

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**American Hoist**

**& Derrick Company**

**ST. PAUL 1, MINNESOTA**



Bulldozers, trucks and other equipment have a busy time as grading swings into high gear through rough terrain.

## Improving U.S. 111, near Harrisburg, Pa.



Left to right: Charles G. Kleckner, resident engineer, Pennsylvania Department of Highways; Clair Crum, bridge foreman, and D. W. Kuhn, of Reed & Kuhn, subcontractors for bridges.

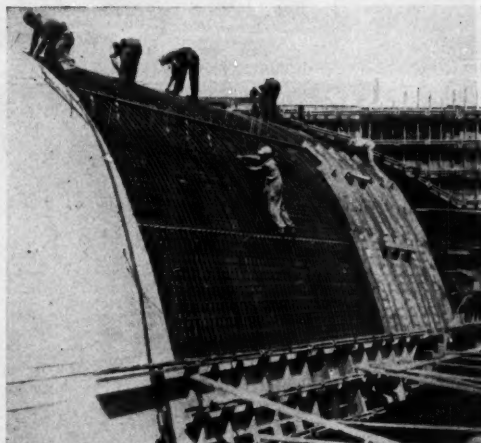
To provide a better, safer road, U. S. Route 111, popular Harrisburg to Baltimore highway, was recently relocated in Newberry and Fairview Townships, south of Harrisburg. The 31,193-ft project was authorized by the Pennsylvania Department of Highways, and included the erection of four bridges. Contractor was Central Pennsylvania Quarry, Stripping and Construction Co., Hazleton, Pa. Reed & Kuhn, Elysburg, Pa., handled the bridge erection. Bethlehem furnished reinforcing steel, bar mats, and dowel units.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation*

## STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail  
Guard Rail Posts • Wire Rope and Strand • Pipe  
Hollow Drill Steel • Spikes • Bolts and Nuts  
Timber Bridge Hardware • Tie-Rods  
Sheet- and H-Piling • Fabricated Structural Steel



Workmen tie Bethlehem Reinforcing Bars prior to pouring of concrete. Bethlehem Bars were also used in three additional bridges for new highway.



Power shovel, rigged with Bethlehem Wire Rope, loads heavy-duty truck. Bethlehem Wire Rope sees plenty of tough service in road construction.



# SAVED...time, money and materials!

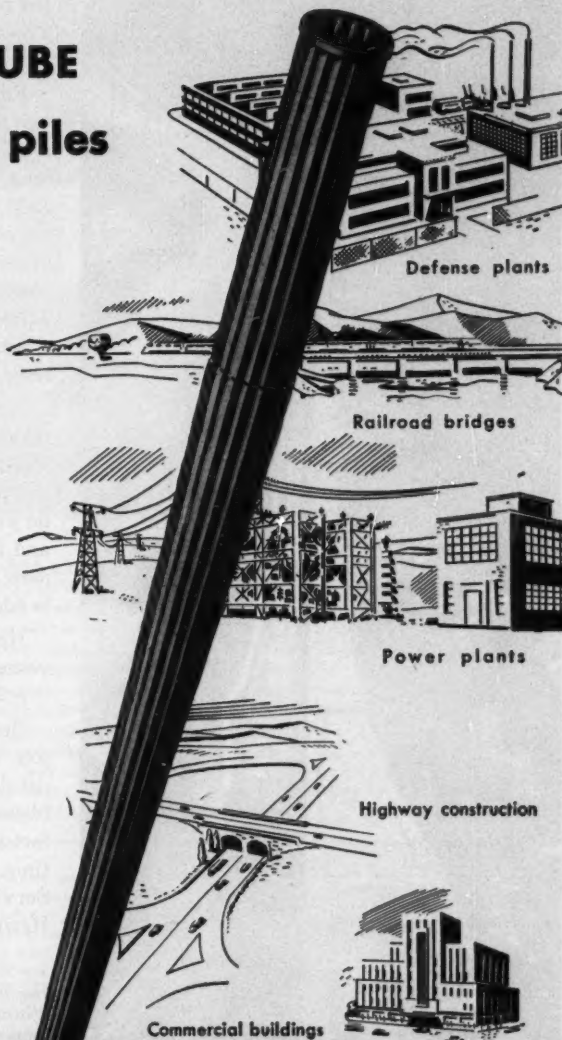
## ...with MONOTUBE taper-flute steel piles

**T**HESE days, when conservation is a must, you'll want to take a *close* look at Monotube advantages and economies. We can't give you the whole story here, but as a starter, remember these facts . . .

**CONSERVING MATERIALS!** Due to their tapered design and cold-rolled properties, Monotubes *save steel* while providing unusually high bearing values and exceptional lateral stability. Result? Steel is conserved and required loads can often be carried by *fewer* Monotubes. Moreover, Monotube on-the-job extendibility, with easy cut-off and simplified weld-splicing, is another *big* factor in conserving materials.

**SAVING TIME AND MONEY!** Naturally, the above advantages save time and money as well as materials. But, *in addition*, Monotube taper-flute design results in *faster* driving. Lighter, standard driving equipment generally suffices even on the *tough* jobs! Then, too, because Monotubes are lighter in weight, they're easier, faster to transport, handle and locate.

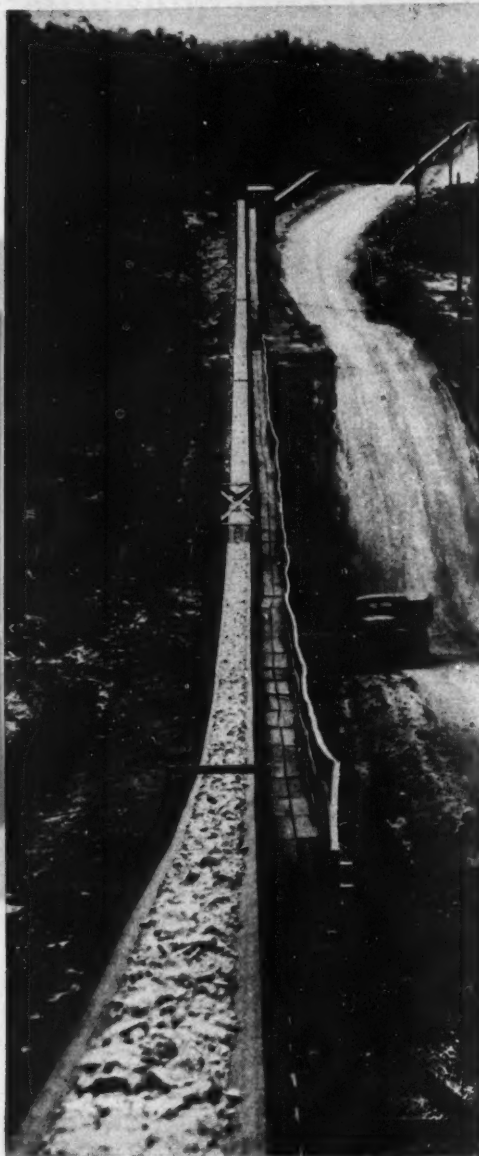
Weigh these advantages. Then get *all* the facts and check them against your important construction projects ahead. You'll see many ways in which Monotube taper-flute steel piles offer material conservation as well as unusual economy all along the line. For complete data, write to The Union Metal Manufacturing Company, Canton 5, Ohio.



## UNION METAL

*Monotube Foundation Piles*

# Mountain Moved 7 Miles @ 4½¢ per Ton-Mile



More than 4½ million tons of aggregates were used in building the Bull Shoals Dam. To obtain the rock, a mountain was leveled 7 miles away. The material moved those 7 hilly miles over Hewitt-Robins idlers for only 4½¢ per ton-mile.

Flippen Materials Co. acted wisely in selecting belt conveyors. They saved \$560,000 on purchase and installation vs. a fleet of trucks, a 7-mile highway and incidentals. They saved another \$375,000 in 2½ years on man-hours—a total saving of \$935,000 without considering the economy of electric power over gasoline and oil. Total replacement and repair expense for Belt Conveyor Idlers was less than \$2,500. Compare that with the expense of keeping 30 twenty-ton trucks (and their tires) rolling 2½ years!

Belt Conveyors offer you numerous other substantial benefits. For installation, operation and maintenance, you need a primitive dirt road—not a paved highway. You cut across grades—no winding for miles around them. Rivers, ravines and roads can be spanned with bridges made of wood. When tunneling is inevitable, a simple hole is adequate.

Hewitt-Robins offers three types of Belt Conveyors—engineered, sectional and low sectional—able to meet every construction-project need.

Before you bid on another highway or dam job, consider belt transportation. Send us the details, including topographical maps, for an unbiased analysis. We will tell you—honestly and factually—whether belt conveyors will save you time, trouble and money. Address Contractors' Service Dept., Robins Conveyors Division, Hewitt-Robins Inc., 270 Passaic Ave., Passaic, N.J.

*Hewitt-Robins is participating in the management and financing of Kentucky Synthetic Rubber Corporation.*

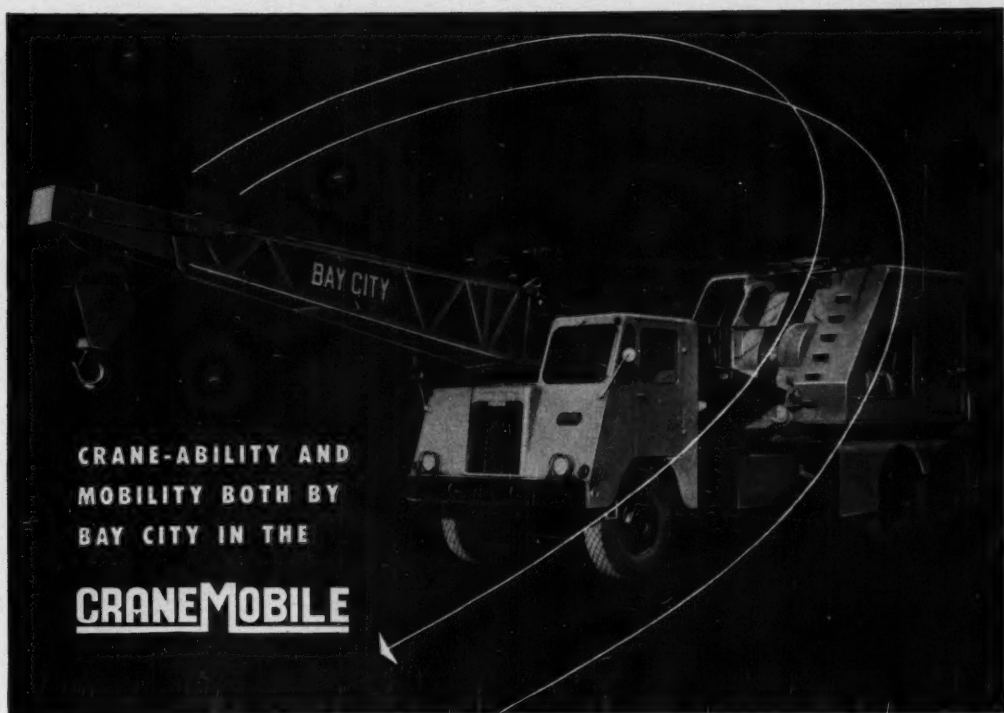
**HEWITT-ROBINS**  
**BELT CONVEYORS**

**HEWITT-ROBINS**



**INCORPORATED**

BELT CONVEYORS (belting and machinery) • BELT AND BUCKET ELEVATORS • CAR SHAKEOUTS • DEWATERIZERS • FEEDERS • FOAM RUBBER PRODUCTS • FOUNDRY SHAKEOUTS • INDUSTRIAL HOSE • MINE CONVEYORS • MOLDED RUBBER GOODS • RUBBERLOK ROTARY WIRE BRUSHES • SCREEN CLOTH • SKIP HOISTS • STACKERS • TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS



CRANE-ABILITY AND  
MOBILITY BOTH BY  
BAY CITY IN THE

**CRANEMOBILE**

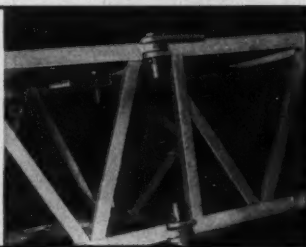


With a BAY CITY built CraneMobile you get a 2-in-1 combination that's hard to beat. The ruggedly constructed carrier is designed and engineered to meet difficult operation conditions and has the power, speed, and mobility to get to the job fast. The powerful crane is designed for high performance and easy operation. Put them together and you have the perfect solution for handling heavy loads, high lifts, and long reaches. S. J. Groves and Sons, repeat BAY CITY buyers, have found that to be true with their 25-ton CraneMobile shown here working on the New Jersey Turnpike project near Swedesboro, N. J. Like Groves, owners everywhere have found that a CraneMobile means a profitable operation . . . why not see your nearest dealer or write us for the full story on the BAY CITY CraneMobile. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN.

CHECK LIST

- ✓ 20-25 Ton Capacity
- ✓ Pin-Connected Boom
- ✓ Hi-Collapsible Gantry
- ✓ Independent Power Boom Hoist
- ✓ Precision Load Lowering
- ✓ Removable Counterweight
- ✓ Specially Designed Carrier
- ✓ High Road Speeds

BAY CITY booms are of all-welded high strength alloy steel construction, pin-connected for quick, easy changes in length to meet job needs. The specially engineered features of BAY CITY booms are typical of the thorough attention to detail which goes into every BAY CITY.



184



**BAY CITY**



SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

## Construction News in Pictures...



**WHERE'S THE CROSSING?**—Missouri River bridge at Decatur, Neb., must wait until channel is shifted before it goes anywhere. And now, with Federal river funds cut back, there's no telling when it will. Structure consists of two 420-ft main spans

plus six 150- and three 70-ft spans. Main foundation caissons were sunk 90 ft. General contractor for \$1,454,000 project is William J. Howard Inc., Chicago, with H. M. Mass Construction Co., Algonquin, Ill., as subcontractor.—Wide World



**WHAT'S THIS, DADDY?**—A 2-yr-old sidewalk superintendent inspects marsh buggy at Tulane University exhibit of oil industry construction equipment. Her attitude typifies layman's reaction to contractors' big rigs: a mixture of awe, skepticism, fascination and "let's get the hell out of here".—Wide World



**CALLING ALL CARS!**—Improved communications will be assured Rochester (N.Y.) Bureau of Police when machines of C. P. Ward Inc. finish placing this 135-ft, 13,000-lb radio transmission tower for Genesee Steel Co., Rochester, general contractor on project. Cranes are 20-ton Lorains with 75-ft booms.

(Continued on page 42)



# GAR-BRO *Power-carts* MOVE MORE CONCRETE at less cost!



ONE MAN AND A POWER-CART can do as much work per day as 6 to 10 men with wheelbarrows or 3 to 4 men with push carts because the Power-cart handles more (up to 14 cu. yds.) and travels faster (up to 12 mi. per hr.).

On the Power-cart the driver rides—uphill, downhill, on 5 ft. runways or over rough ground. He can start fast and stop fast. Has complete control to dump the load or place it carefully. Get the complete facts; write for Bulletin No. 83.

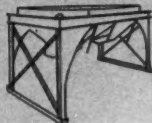


EVERYTHING FOR FASTER HANDLING OF CONCRETE



## Buckets

World's most complete line—25 models ranging from 1/2 to 8 cu. yd.

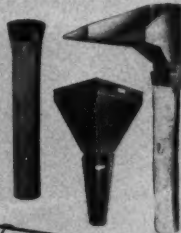


## Hoppers

Includes portable, tower and floor hoppers (28 models) with cap. to 10 cu. yds.

## Chutes

A complete line of concrete collection hoppers, steel drop chutes, rubber elephant trunk & line chutes.

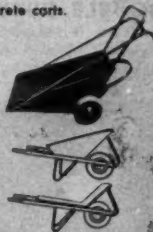


## Carts

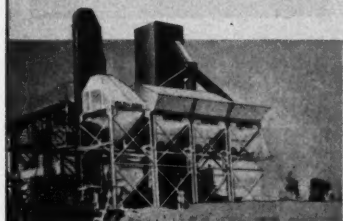
Power-carts with concrete tray, box tray or platform (cap. up to 14 cu. ft.—2000 lbs.). Also six models of hand-push concrete carts.

## Barrows

complete line (35 models) with steel or aluminum trays and with wood or steel handles.



**Bin Gates and Weigh Hoppers**  
in all styles and types.



## Unit Batch Plants



A variable combination of portable aggregate and cement storage bins with traveling weigh hopper.



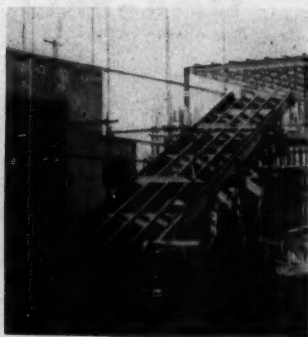
write for  catalog

# GAR-BRO

MANUFACTURING COMPANY

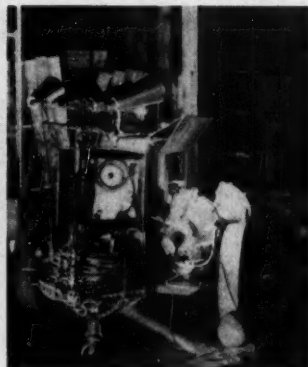
2416 East 16th St., Los Angeles 21 / Dealers everywhere

## Construction News in Pictures... Continued



**LUMBER LIFT**—Versatile hoist on Ford truck chassis lifts lumber and other materials to upper floors of Moore & Roberts' home-town school job in Berkeley, Calif. Old Ford engine runs conveyor line, which consists of two chains driving a series of angle-iron

dogs that slide up inclined timber frame. Conveyor inclination and height are adjusted by winch and cable to telescoping brace at front. Job-built rig lifts lumber faster than two men can load it—From Geo. F. Burnley, Oakland



**DOUBLE DUTY**—Joseph Sefcik, Elmwood Park, Ill., specializes in welded repairs and hard surfacing on contractors' equipment, which he usually does at night. So he could see, he fitted his Hobart combination 200-amp ac arc welder and 5-kw power unit

with seven floodlights (three commercial, four home-made) that give 2,000,000 cp. Trailer also carries oxygen and acetylene tanks between wheels and welder, with hose and cable on reels at front—Hobart Brothers Co. Photo



**TAMPING TEAM**—International wheel tractor tows 500-cfm Ingersoll-Rand compressor that supplies air to RPB pavement breaker fitted with tamping shoe. This is on 20-in. natural gas

line, part of 30-mi installation for Laclede Gas Co. of St. Louis, where four such teams handle drilling, breaking and backfill tamping. Contractor is Frazier-Davis Construction Co.

(Continued on page 44)

# a Traylor TY Reduction Crusher cuts costs by more efficient use of power

## THIS SIMPLE TEST SHOWS HOW A TRAYLOR TY CUTS DOWN POWER LOSS

Two commonly used types of pliers can be used to illustrate the greater efficiency of Traylor crushing surfaces over conventional types. Place a nut or similar object in the straight jaws of an ordinary pair of pliers. Notice how the object has a tendency to slip out of the jaws when force is applied . . . how much effort is required to finally break it. Now place a similar object in a pair of pliers designed so that their jaws move *parallel* to each other. Notice the positive grip . . . how much less effort is required to crush the object. That's because power was applied directly counter to an opposing surface.

Traylor Curved Concaves and Bell Heads use this same principle to reduce power waste. These curved crushing surfaces have been so designed that the eccentric motion of the Bell Head exerts power directly counter to the curved surfaces of the concaves. This stops lifting and churning of material . . . cuts power loss . . . reduces power costs per ton.

Mail coupon for complete  
details and capacities

Traylor TY Reduction Crushers are more economical to operate . . . more dependable in heavy-duty continuous service. In addition, they produce a better, more uniform product. For proof of this outstanding performance, fill out and mail coupon for free bulletin on a Traylor TY Reduction Crusher.

# Traylor

Rotary Kilns, Coolers and Dryers • Grinding Mills  
Jaw, Reduction and Gyratory Crushers • Crushing Rolls

TRAYLOR ENGINEERING & MANUFACTURING CO.  
349 MILL ST., ALLENTOWN, PA.

I want to know more about a Traylor TY'S efficient use of power.

Name \_\_\_\_\_

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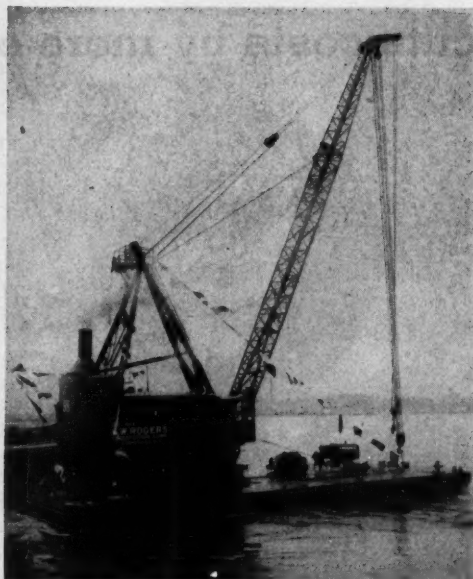
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SALES OFFICES: New York, N.Y.; Chicago, Ill.; Los Angeles, Calif.  
Canadian Mfrs: Canadian Vickers, Ltd. Montreal, P.Q.

A "TRAYLOR" LEADS TO GREATER PROFITS



**ATOMIC SHIELDING**—Precision concrete blocks, thousands of them, are cast for nuclear research cells on Austin Co. project at Argonne National (atomic) Lab near Chicago. Forms are steel plate and angles, welded and milled to true surface and exact dimension for 1/16-in. tolerance. Dense blocks are 18x18 in. and up to 30 in. long. In place, they are keyed by 3-in. square steel core, while 1/2x2-in. lead strips seal horizontal joints.



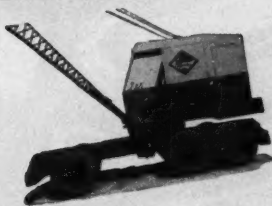
**PROUD PARADING**—Taking delivery of spanking new \$150,000 derrick, New York's Geo. W. Rogers Construction Co. proudly sails her around harbor, flags flying. Among largest of its type in metropolitan area, rig mounts 50-ton Wiley Whirley crane with 110-ft boom on 46x85-ft steel scow. After this parade ended, flags were furled, and machine was put on workaday job of pulling 2,300 fully lagged 90-ft piles on pier removal project.



**CEMENT UNLOADING**—Aggregate handling machines are adapted to unloading bulk cement on Durham (N.C.) contractor Nello L. Teer Co.'s highway jobs. Dust-tight metal covers and collapsible canvas spouts have been added to Barber-Greene

rigs, which empty cement car in 2 hr. During 1950 season, Teer's unloading team handled 200,000 bbl of bulk cement for 96 mi of paving. Unloading point had to be changed seven times, but machines were just towed from site to site, and quickly set up.





### 1 CRAWLER TYPE

- Available in capacities up to 120 Tons
- Travel speed up to 1 M.P.H.
- Requires one operator
- All major operations controlled by air (excluding Type 34)
- Steers from the cab

### 2 WHEEL TYPE

- Types 34 and 604 available with wheel mounting.
- One engine powers all operations, including travel
- One operator controls all operations from cab
- Rotating assemblies have same basic features as corresponding crawler machines

### 3 TRUCK TYPE

- Mounted on 10-wheel truck carrier
- Powered by two engines
- Requires two operators
- Can travel up to 31 M.P.H.
- Available only with Type 34 rotating assembly

# 3 Ways to faster-more efficient Crane Service

LIMA Shovels, Cranes and Draglines are built in the following capacities—Shovels  $\frac{3}{4}$  to 6 yards, cranes to 110 tons and draglines, variable. Rubber-mounted Truck Cranes in 20 and 35 ton capacities.

CRANES—Crawler mounted - truck mounted - wheel mounted - Baldwin-Lima-Hamilton builds them all and in sizes that will best meet your requirements. When mounted on rubber they are available in capacities up to 35 tons. They will go anywhere you can drive a truck and at speeds up to 31 M. P. H.

For work where mobility is not an important factor, LIMA crawler mounted cranes can be furnished in capacities up to 120 tons. To increase their range of usefulness a variety of attachments are available: shovel, dragline, clamshell, pullshovel and pile driver. Each attachment is interchangeable. For faster, more efficient crane service buy the crane that is first in quality—first in safety and reliability—BUY LIMA.

It will pay you to consult your nearest LIMA Sales Office or Representative before you buy your next shovel, crane or dragline. Offices in principal cities of the world.

**BALDWIN-LIMA-HAMILTON  
CORPORATION**  
LIMA-HAMILTON DIVISION  
LIMA, OHIO, U. S. A.

**LIMA**  
CRANES • • • SHOVELS • • • DRAGLINES



**TOUGH?**  
 Man, they're  
super-tough!

**A**RE stone bruises, cuts, snags, on tire killing jobs giving you headaches? If so, your answer is the Hard Rock Lug—because its tread and sidewalls are armored by massive lug bars as protection against cuts and rips—because its extra-thick undertread protects an extra-thick carcass—because its self-cleaning tread assures outstanding traction, unmatched performance.

**The Hard Rock Rib** is the perfect companion tire for front wheels in rock work. It has the same cord body, same shoulder and sidewall as the Hard Rock Lug, provides easier steering and smooth rolling on even the roughest jobs.

**Proof?** More tons are hauled on Goodyear truck tires than on any other kind!

**TWO MORE REASONS  
 WHY IT PAYS  
 TO BUY AND SPECIFY  
 GOODYEAR**



**ALL-WEATHER**

Finest for flotation, rolling  
 big loads faster

**SURE-GRIP**

Tops for drive-wheel trac-  
 tion on graders and pans

**GOOD  YEAR**

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

All-Weather, Sure-Grip—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Harold W. Richardson, Editor

## Too Much Overtime?

MILITARY CONSTRUCTION AUTHORITIES are becoming quite concerned—and rightly so—over the amount of overtime being paid on some fixed-fee jobs this early in the defense program. Practically every big project in the country, both military and civil, is working overtime, but a few have been stepped up to 54, 60 and even 70 hours per week.

Of course, from a standpoint of progress and to sweeten the labor recruiting inducement, some overtime—say up to 48 hr—is probably both desirable and necessary. But where to stop? Where can the line be drawn between excessive overtime and double shifting? In many parts of the country the labor supply is not so critical but what double shifts are possible.

We are not judging the necessity of speed in building defense facilities. Certainly, some are most vital and their earliest possible completion is imperative. But surely every project doesn't fall in the category of rush emergency.

We can point out, however, the

danger to other parts of the defense construction program if one part is carried out at a speed requiring excessive overtime. The result will be a disruption of construction labor by desertion from low-overtime jobs to those working much higher overtime. Thus, the whole program will suffer, or else we will face a labor demand for a longer work week on every project. Furthermore, excessive work-weeks on fixed-fee projects are tough competition for lump-sum contracts.

While costs are secondary in defense and war construction, we should still be conscious of them. Inflation has already placed a terrible burden upon the taxpayer in mobilizing the country. Any way to ease that burden and to lessen the economic strain is certainly worth while considering.

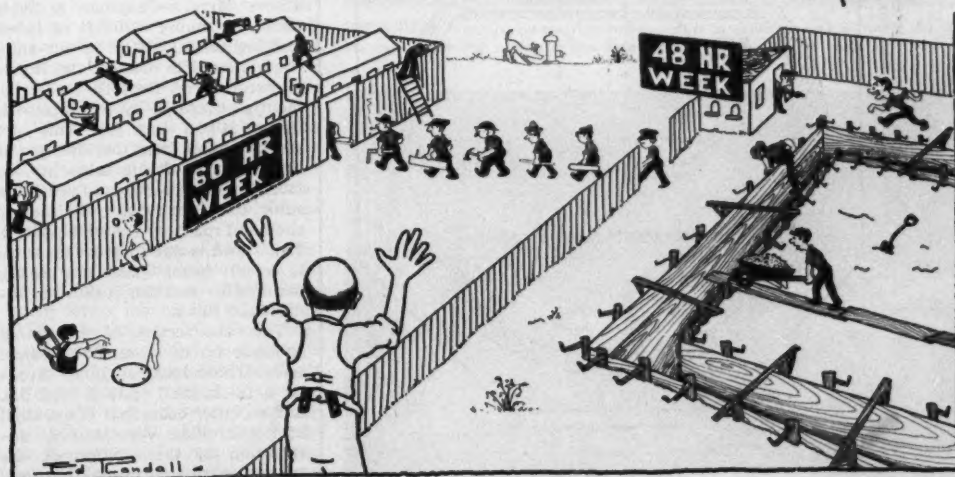
We believe the contract authorities would be justified in limiting the amount of overtime on fixed-fee work, at least in the present stage of operations. Except, of course, where they are convinced the project is so vital it must be finished over night and that

double shifting is not practical. Let's keep the construction industry right side up for as long as we can—we may need it later.

### CMP Should Help

THE CONTROLLED MATERIALS PLAN announced to become effective July 1 should help the construction industry, for ours is certainly an industry vital to mobilization. Steel, copper and aluminum will be allocated to defense production and construction.

Critical materials will be allocated direct to some, but not all, construction programs. CMP Regulation 6 will cover this, but details have not yet been worked out. Important, too, to contractors, will be the materials allocations to equipment manufacturers. CMP should assure a reasonable amount of new equipment for defense project builders. And, perhaps, CMP will stifle the black market already looming up in construction circles.



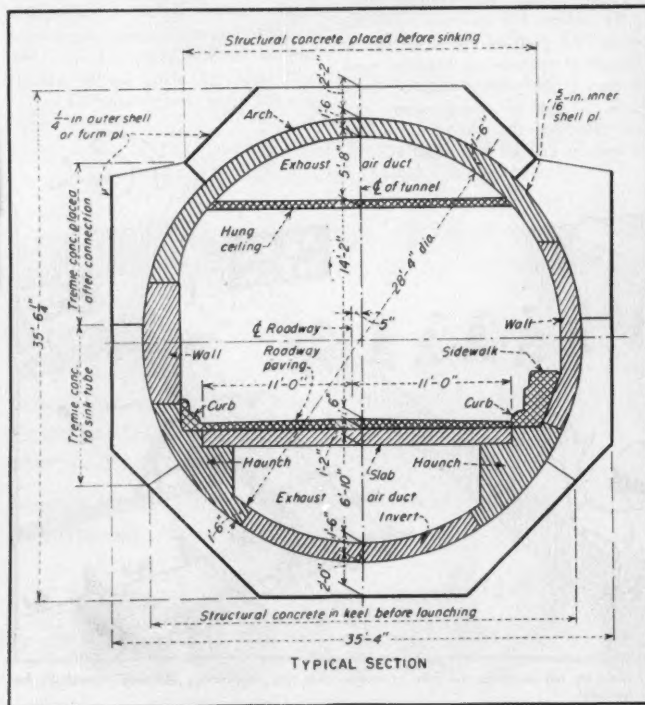
**SPIKE SEZ:** Holy Smoke, how in tarnation can I keep my job going in the face of competition like that across the way? Somebody had better get busy on controls of work-weeks on fixed-fee jobs!



In six weeks this shell will be lined and in place, for they ...

## Sink Tubes Fast for Norfolk Tunnel

By HENRY T. PEREZ,  
Managing Editor



A FINE EXAMPLE of modern trench-type tunnel construction is now in full swing in Virginia. There, Merritt-Chapman & Scott Corp. is sinking 2,100 ft of tubes and building 1,250 ft of cut-and-cover tunnel to connect the Berkeley section of Norfolk to Portsmouth, separated by the Elizabeth River. It's a fast job—only six weeks elapses from the time one of the 300-ft, 31-ft dia tubes arrives from the fabricating yard until it is sunk to place with all interior shell and roadway concrete poured. This speed is due in great measure to steel forms that are easily handled by traveler inside the individual tubes.

The tube section of the tunnel is made up of seven 300-ft steel units. These have an inner circular 5/16-in. shell of 31-ft 4-in. dia, and an outer octagonal 1/4-in. shell 35 ft 4 in. wide. Very simply, construction of this section of the tunnel involves: fabricating and launching the seven watertight steel tubes; constructing therein,



while afloat, an 18-in. concrete lining and 14-in. roadway slab; pouring a concrete envelope between inner and outer shells; sinking the tubes into a dredged, graveled trench; joining the tubes under water; backfilling the trench; connecting the tubes to the cut-and-cover sections on each shore; opening the tunnel portal to portal by cutting through the tube's bulkhead ends; and completing the interior work.

• **Tube assembly**—As subcontractor to Merritt-Chapman & Scott, Bethlehem Steel Co. is fabricating the seven tubes on shipways at their Sparrows Point yard near Baltimore. Bulkheaded to make it watertight, each is launched after more than 1,000 tons of concrete ballast has been poured in the keel between inner and outer shells, and with all ring reinforcing steel all ready welded in place for the tube's concrete lining. It is towed 180 mi to the tunnel site where the tube is moored to a shape-up dock while it is further prepared for sinking.

• **Shape-up work**—Main work at the shape-up dock is concreting—both inside the tube and between its double skin. Sectionally, the interior is poured in five consecutive stages: Invert; lower haunches; roadway slab; side-walls; and arch. Pouring of each stage is generally completed throughout the length of the 300-ft tube before starting on the next stage. And, to maintain longitudinal trim, each of these stages must be handled in two 150-ft steps: (1) Two 75-ft pours each centered at the quarter points 75 ft from the ends of the tube; and (2) the 75-ft center closure section plus the two 37½-ft ends.

Shape-up work requires about 6 weeks per tube. However, more than one unit is worked on simultaneously, with concreting operations following consecutively from tube to tube.

• **Interior forms**—All interior concrete, with the exception of the invert, is poured in Blaw-Knox steel forms moved by traveler in 37½-ft sections. Four of these sections are provided for each type of pour so the specified 150 lin ft of tube can be formed up at one time. For the second-step pouring in each case, one of the two forms at the quarter points is moved toward the center of the tube, one to the end.

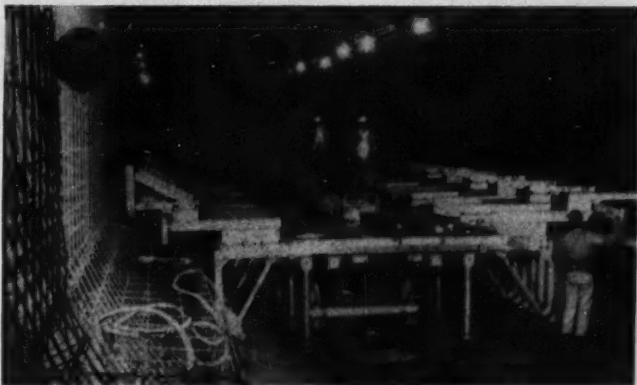
Of course, all forms and trav-



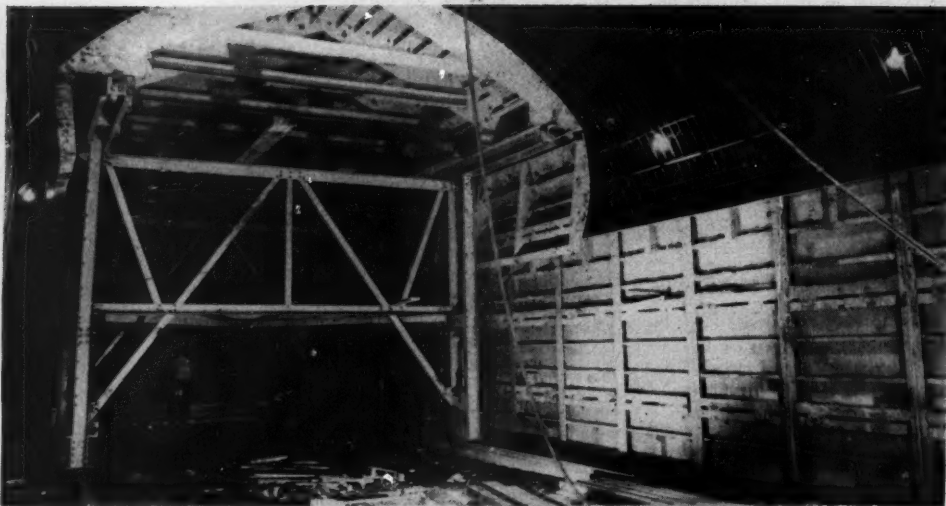
LAUNCHING BOW protects watertight bulkhead at end as tube slides from shipways on which it was fabricated. Bow will be removed for re-use on other tubes.



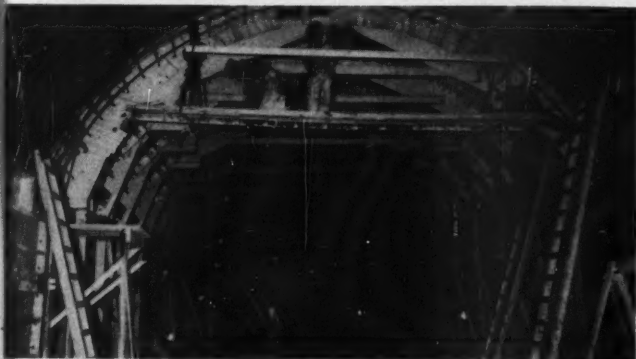
THREE TUBES in various stages of completion moor to shape-up dock at tunnel site. Right one waits for sinking; center for final envelope pour; left for interior pours.



FORM TRAVELER riding on invert carrier sections for haunch pours, will also handle forms for roadway slab. Jack legs will post forms to invert to free traveler.



ARCH FORMS are handled by same traveler that sets wall forms, small ones handle all forms for complete lining of seven big tubes shown in place at right. Two of these travelers plus two of the before they are sunk to place in trench.



BULKHEAD FORM of matched lumber is fitted for arch pour. Traveler has moved to get next arch form section, and this one rests on wall plate on jack-footed posts.



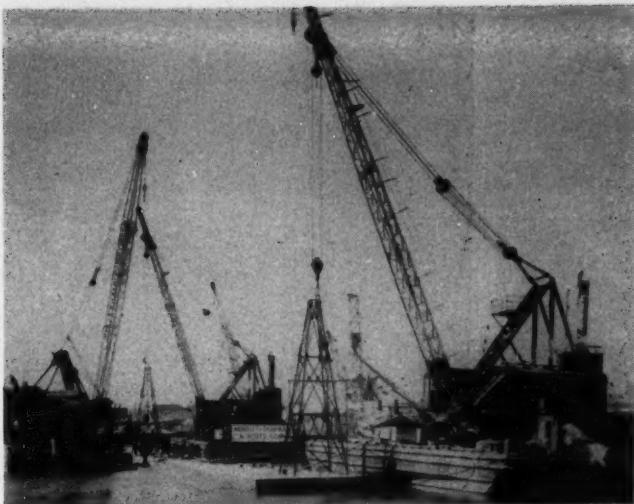
FORM PANELS are wire brushed for use in next tube, after dis-assembly for removal through 3x5-ft hatch. Note wires that score concrete for good bond to tile lining.

elers have to be completely dis-assembled for movement into or out of the tubes. Access is through a top hatch only 3 ft by 5 ft, so Blaw-Knox designed the forms so that by proper adjustment only a minimum of panels and pieces would need to be handled in and out. For example, form panels and travelers for the haunch pour are basically the same as those for the roadway slab. The shift from one to the other requires only the switching and insertion of a few panels. Also, wall and arch forms are handled by one type traveler, even though they are independent units.

Additional benefit will occur on construction of the circular type cut-and-cover tunnel section 775 ft long. Here, the same forms used for lining the tubes will be coupled together so that walls and arches can be poured in one operation.

- **Invert pour**—The invert, 18 in. thick, extends some 7 ft on either side of the longitudinal centerline. As for all subsequent operations at the shape-up dock, concrete is mixed in a floating plant moored at a wharf nearby, and delivered to the tube deck by Pumpcrete machine. Concrete is dropped to the invert by elephant trunks through hatches in the shell. It is placed from end to end of tube in one continuous 8-hr pour.

Invert concrete is screeded by a clever job-built drag that is pulled along the tube by air tugger hoist. Spanning the invert, the de-



FLOATING DERRICKS hold tube while concrete is tremied between inner and outer shells, will lower it gently to place in trench when negative buoyancy reaches 80 tons.

vice rides longitudinal rails on timbers resting on brackets welded to the tube shell. The lower section is a steel plate whose edge is cut to invert curve. To this plate is loosely bolted a steel channel, web vertical, that is also curved to the invert. Slotted bolt holes in the web allow the channel to move reciprocally through a short transverse arc, with motive power supplied by a workman moving a long lever arm back and forth. The steel screed's reciprocating motion makes concrete spreading a comparatively fast and easy operation, and it leaves an extremely smooth invert surface.

• **Haunch pour**—The haunches extend up from the edges of the invert pour, and form the sides of the under-floor exhaust air duct. They consist of a series of ledges that support roadway slab, curbs and sidewalk.

Haunch forms are handled by two six-wheel travelers that ride 5-ft-gage tracks on the invert slab. Screw jacks at each wheel adjust the travelers for height, and each traveler handles 37½ ft of form for each side of the tube at a time. The forms themselves are cantilevered from a frame of transverse telescoping channel beams, spread or retracted by three ratchets, that

ride on the traveler. When the traveler has moved a form section into position, jack legs are extended from the frame to the invert so the traveler can be lowered and moved to handle another 37½-ft section.

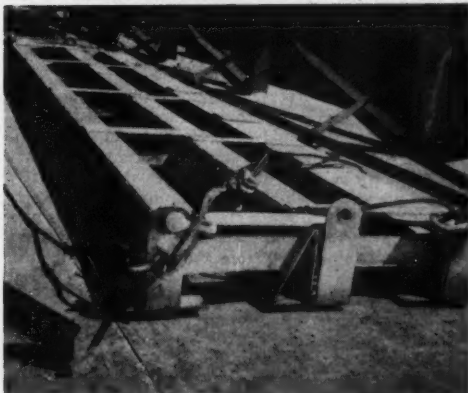
Concrete is directed into the forms by elephant trunks, and the 150 total lin ft of pour is usually completed in 4 hr. After haunch forms for the second pour are set and posted, the travelers are freed so floor slab forms can be assembled on them.

• **Slab pour**—The roadway slab is 22 ft wide and 1 ft 2 in. thick, and will be given an additional 6 in. of paving when the tunnel is opened portal to portal.

Forms for the slab pour are handled by the same two travelers that move the haunch forms. Slab forms have a sliding plate joint at the center, and their framework is telescoped by eight ratchets. Eight pairs of jack legs, each leg a 3-in. pipe with a 2-in. screw jack at its lower end, act as posts to hold the placed form and release the traveler for the next section. For this pour, too, concrete is placed by elephant trunk. It takes only 1 hr to strip, move and re-set 75 ft of slab forms.

To remove the forms and travelers from beneath the roadway, they must be dismantled there and hoisted through a hole left open in the slab for that purpose. This opening is then closed with concrete poured on a wood form.

• **Wall pour**—The walls on each side of the tube differ: One gener-



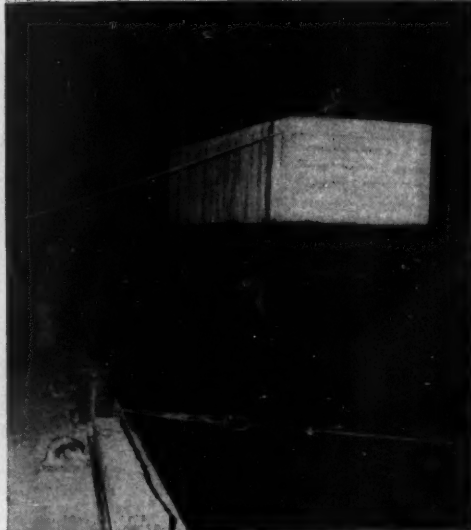
SCREED ASSEMBLY that smooths 2-ft gravel base for tubes is steel sweep (shown on deck, above) pulled by powered carriage on



barge. Carriage rides rails set at tunnel slope so sweep depth need not be changed during barge-length travel.



**TUBE OUTLINE** barely shows under water as tremie sinking pour nears completion. Like all other tube pours, it's Pumpcreted.



**CONCRETE COUNTERWEIGHT** is lowered to top of tube to serve as temporary ballast while tremie envelope is completed.

ally follows shell-plate curve to 6 ft 9 in. above springline, making an 18-in. thick concrete lining; the other is vertical, leaving the lining thickened to incase ducts, and extends 4 ft 2 in. above springing.

Wall forms are carried by traveler, of which there are two, riding rails 18 ft apart on the roadway slab. The traveler is raised or lowered by a hydraulic jack in each of its four legs, and it suspends the wall forms by sets of three ratchet turnbuckles. When the traveler has placed them in position, the forms are held in place by bolts to Richmond Tyscrus welded to the tube's steel skin, freeing the traveler.

Tunnel walls will be faced with glazed ceramic tile. To furnish improved bond for the tile-cementing mortar, lines of 3/16-in. dia wires 4 in. apart are permanently welded horizontally to the face of the form panels. When the forms are stripped, these wires not only leave their own groove in the concrete but spall off enough more so that good bond will be assured. The wires do not add any difficulty in stripping, but these forms, like those for the rest of the lining concrete, are kept well polished and coated with a clear lacquer.

Concrete is poured simultaneously in both walls of the tube. It is pumped through the tube hatch into a tower-mounted hopper from which a chute leads to each wall

form. The steel frame tower is on wheels, and is pulled along the floor slab from hatch to hatch as required.

• **Arch pour**—The arch completes the pre-sinking lining work. With the exception of the edge where it meets the thickened sidewall, the arch follows tube radius and is 18 in. thick.

The same two travelers that handle the wall panels carry the arch form. The traveler can move either or both types of forms independently or simultaneously. Thus, arch panels can be assembled on the traveler while the first 150 ft of wall is being poured; then the traveler can move the wall forms ahead and set the arches. Arch forms are supported by steel wall plates on jack-post frames that rest on the roadway slab, and by Tyscrus to the tube shell. Hinges at the lower form panels on each side, which carry wires to score the concrete for tile setting, permit them to swing in for stripping.

One difficult forming job is to bulkhead the ends of the arch pours, around all the longitudinal reinforcing steel. This is handled by matched lumber, placed radially. Tips of the boards are cut to tube arc, edges are on radii, and all pieces are numbered for re-use. They are held in place by wales bolted to the bracing of the steel

form and wedged to the reinforcing.

All arch concrete is poured directly to the forms through tube hatches. On the second arch pour in a tube, concrete is omitted at the exit hatch and poured in a hung wood form after steel forms and traveler have been dismantled and taken out of the tube. Then, the tube shell is made continuous by welding plates over the former hatch locations.

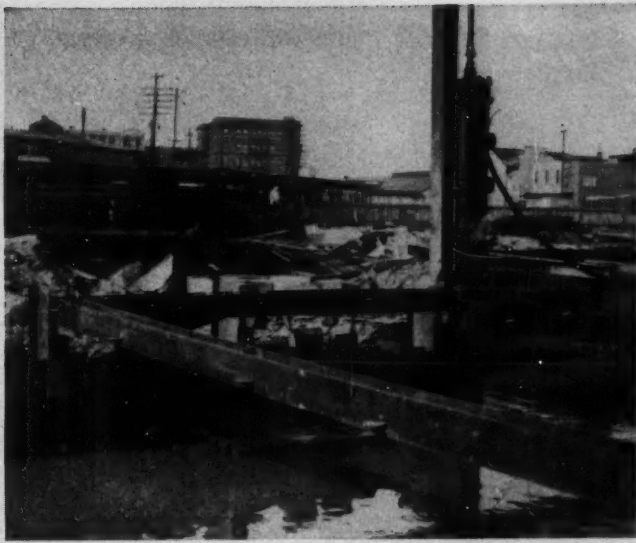
• **Exterior pours**—Upon completion of lining operations, additional concrete encasement is poured around the outside of the tube, within the double shell. First some is tremied into one side to trim the tube (which lists because of non-symmetrical lining concrete), then some of the caps that cover the top are poured. Additional concrete is tremied into the sides to lower the center of gravity and increase stability, after which the remaining caps are completed. The tube's freeboard is now about 1 ft, its displacement some 9,100 tons, and it is ready for sinking.

• **Site preparation**—While the tubes are being prepared at the shape-up dock, a trench to receive them is dredged across the river. The cut is 40 ft wide at the bottom, with side slopes generally 1 on 2½. Trench bottom is 97½ ft





**TUBE END** carries steamboat ratchets and lugs for connection to next section.



**SHEETED TRENCH** will receive one land end of tube tunnel. Super-strong sheeting is series of alternate 30- and 36-in. beams driven at right angles to each other.

below low water at its deepest, and here the cut is 55 ft. Excavation is handled by clamshell dredge with 4- or 7-yd bucket depending upon the bottom material, which ranges from marl and sandy clay to river muck. Spoil is barged and dumped into Hampton Roads.

A minimum 2-ft gravel blanket is then placed in the excavated trench. Cast by clamshell, the material is screeded underwater to exact slope and grade. This normally difficult operation is handled by an ingenious screed assembly—a 26x125-ft steel scow on which a rail-mounted, self-propelled carriage rides to drag a sweep suspended by cables. The rails are on a 19-ft gage and are mounted on longitudinal timbers that are posted to the deck so that they are at the same slope (5%) as that required for the gravel surface and for the tunnel. The carriage consists of a two-drum winch mounted transversely on a frame carried by wheel trucks from a crane gantry. Winch and trucks are all operated by steam supplied by the accompanying gravel derrick. The sweep is a framework of three parallel 14-in. WF beams 27 ft long, placed with webs vertical and 26 in. apart, and with the front half of the top flanges of the forward two beams sheared off. From end to end of these beams, a solid steel plate is welded at an angle between the front edge of the bot-

tom flange and the top of the web.

In operation, the scow is spotted longitudinally over the trench, the sweep assembly is lowered and the carriage is run back and forth to pull the sweep and screed the gravel. Because of the slope of the rails, depth of the sweep need only be adjusted once (and kept adjusted for tide stage) at each lengthwise move of the scow along the trench.

• **Tube sinking**—The completed tube is towed over its final position in the dredged and graveled trench, where two derrick boats mounting 50-ton American Revolver cranes hook on to it, one at each end, with slings to lifting lugs. Then, additional concrete is tremied into the tube's side pockets until the negative buoyancy reaches 80 tons, the derrick boats lower away, and the tube sinks gently into position. Transits and levels on shore sight on tall temporary towers on each end of the tube to insure exact alignment and grade.

The tubes are fabricated with semi-cylindrical hood plates of 1-in. steel extending 18 in. beyond each end. These alternate, top and bottom, so that when adjacent tubes are butted together the cylinder halves meet to form a ring that covers the joint between the shell plate. Also attached to one end of each tube are five steam-

boat ratchets. After the tube is lowered to place, divers hook the ratchets over matching lugs on the next tube and tighten them to pull the tubes together. Then they insert 5-in. dia forged steel pins into other pairs of lugs at the abutting edges of the top and bottom hood plates, at mid-height of the tubes, to complete the first-stage coupling. Later this joint is tremie-concreted.

When the tube is joined to its neighbor, six 18-ton (submerged weight) concrete blocks are placed on top as temporary ballast to prevent any movement from taking place should specific gravity of the water change while the tremie concrete envelope is completed. This pour takes 1,000 cu yd, then the weights are removed.

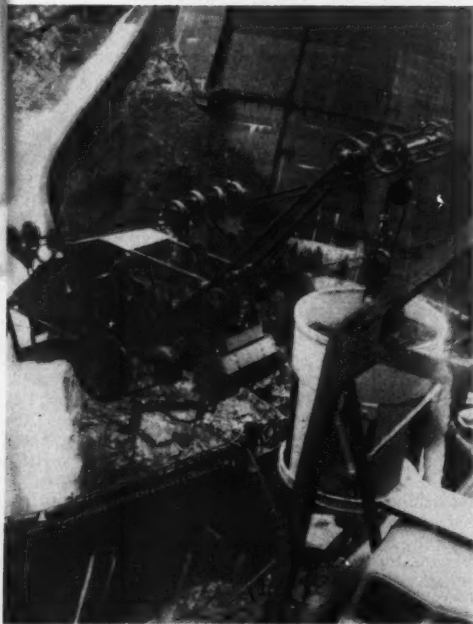
• **Joint pours**—Joints between adjacent tubes are poured after the next subsequent section has been placed. For this, during fabrication, a length of MP 101 sheet-pile was fastened to each vertical side of the square dam plates that form the ends of the tubes outside the inner shell. With the tubes sunk, divers thread another pile into each of these knuckles, then slip a vertical semi-cylindrical closure shell (also fitted with pile knuckles) into the piles of adjoining tubes. Shells, piles and dam plates act as a form into which con-

(Continued on page 166)



**AERIAL TRAMWAY** spans rugged terrain at left end of Diablo Dam in northwestern Washington, where Morrison-Knudsen is lengthening spillways and building new training wall. At extreme right is tramway carriage; moving cableway tower rides on dam.

## Concrete Rides High at Diablo Dam



**POWERED CARRIAGE** picks up 2-yd bucket of concrete trucked from mixing plant to tower for delivery to pour. Operator rides carriage, so he can easily spot the load exactly where it's wanted.

**AFTER 22 YEARS**, the spillways of famous Diablo Dam on Washington's Skagit River are being lengthened. And, as on the original dam construction, concrete placement is unusual. Then, Winston Bros. Co. handled the pours with two tall towers whose booms carried belt conveyors rather than chutes; now, Morrison-Knudsen Co. is placing the mix from an aerial tramway in which the operator rides along.

The spillways hang on the precipitous wall of a deep canyon difficult of access. Because of this, and because of the fine degree of concrete control required to prevent future cavitation of the spillway surface, other placement methods were discarded in favor of the tramway.

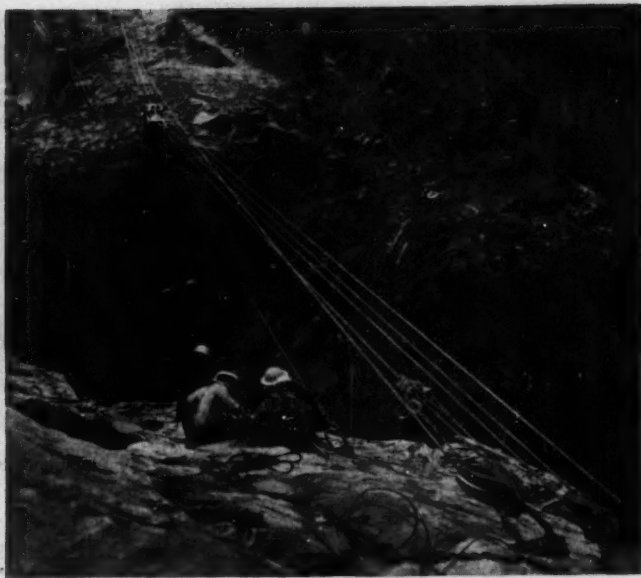
### Carriage, with Operator, Rides Cableway

The aerial tramway is a creation of Phil Grabinski, cableway engineer of Portland, Ore., who calls its traveling carriage a Philstram. This rides a cableway spanning the area, with one end anchored in the far canyon wall and the other end counterweighted in a tower on top of the dam. The tower travels on I-beam tracks, motive power being supplied by a winch and cable assembly at the tower base. Cableway length is adjusted at its outer end by a tackle arrangement whose live line is brought back to another air tugger winch at the dam.

The cableway's carriage is suspended from four  $\frac{3}{4}$ -in. track cables by eight roller-bearing wheels, and it pulls itself along by two  $\frac{3}{4}$ -in. traction cables. It is powered by a 115-hp Chrysler engine and is built of standard automotive parts. Travel, a maximum of 1,200 fpm, is through a 100% reversing transmission that drives an axle which, in turn, chain-



**CLOSE-UP** shows carriage suspension and traction details. Near traction line is slack.



**OUTBOARD END** of cableway is anchored to staples in rock across canyon. Tackle connects to floating sheaves at ends of track cables so length can be adjusted as tower moves.

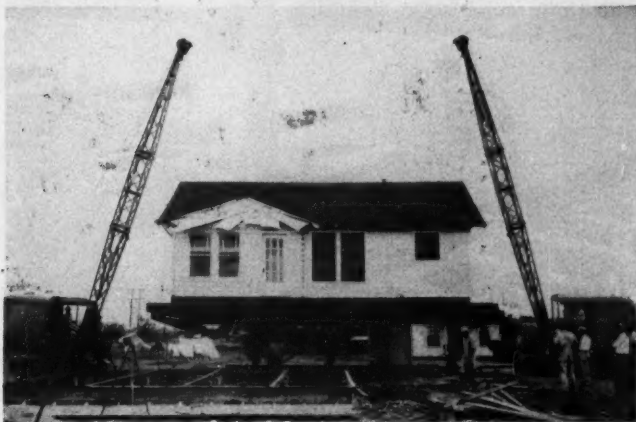
drives two cable-gripping sheaves around which are wound the traction ropes. Thus, the carriage moves without the hauling of any cables, and traction is maintained at all times.

A load carrier projects ahead of the Philstram. Its four wheels ride the track cables, and it raises and lowers its load through a three-part line to a single-drum winch on the front of the Philstram. At Diablo, the installation handles a 2-yd concrete bucket and carries a load of 5 tons. Three of the four track cables and one of the two traction cables could break without dropping the main carriage or load.

Like on an ordinary cableway, the carriage travels the length of the installation, and the tower is moved to cover the width of the working area. However, with the Philstram set-up, the operator sits directly

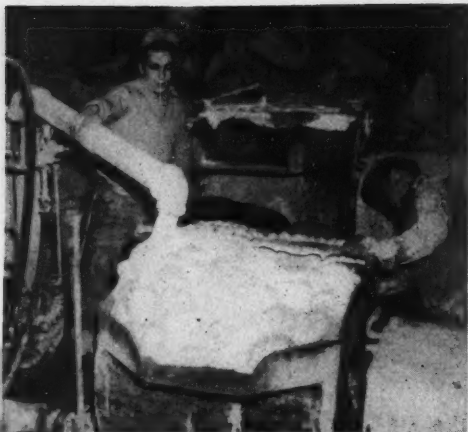
over his load at all times, and thus can pin-point the pour. Picking up a 2-yd bucket of concrete delivered by truck to the dam-top tower, the operator spots it for dumping exactly as indicated by the pour foreman. Occasionally, a tagline is used to drift the bucket over the pour. It takes only about 2 min to move the 2 yd of concrete to place in the spillway from the mixing plant, which is at the other end of the dam, 670 ft away from the cableway tower.

Morrison-Knudsen's Diablo Dam improvement project for Seattle City Light is scheduled for completion this summer. The \$2,000,000 job includes 28,000 cu yd of concrete for lengthening the spillways and building a new training wall. Paul Swanson is contractor's project manager, Gunnar Nygard is general superintendent, and Mark Knight is engineer.



#### **NEW WRINKLE** in home moving

—With a team of two Lorain cranes, W. L. Lipscomb & Son, contractor of Victoria, Texas, converted his two-story garage apartment into a modest cottage by hoisting apartment structure intact off garage and lowering it on to house foundation. Brother operators Theodore and Archie Ripple handled the building movement so skillfully that no piece of furniture or dish in the rooms of structure was broken or displaced. Move was a complete success.



This improbable-looking mixture is . . .



Hosed on asbestos board to make a . . .

## Lightweight, Poured-In-Place Roof Deck

THE ROOF DECK of the Journal Square railroad station in Jersey City, N. J., is an aerated cement mix that is squirted out of a hose. And cement mix it is—for there's no aggregate. It just consists of portland cement, water and a chemical foaming compound that fluffs it up to a density of only 30 lb per cu ft. The queer looking mix has about the consistency of heavy cream when it splashes to the  $\frac{1}{4}$ -in. asbestos-board sheets on which it is poured to a depth of 3 in., but it sets up overnight to make a deck capable of taking an ultimate load of 250 lb per sq ft.

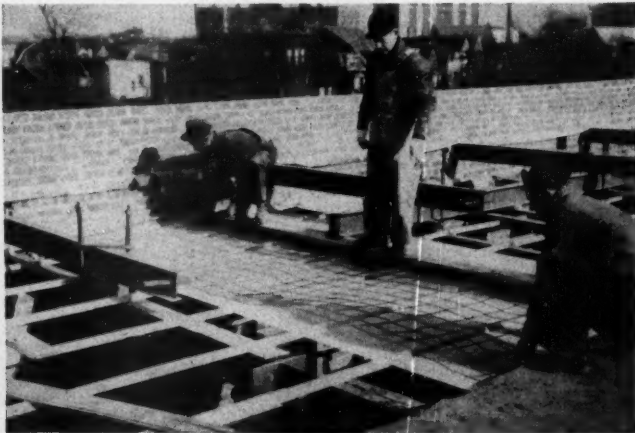
Porete Mfg. Co., North Arlington, N. J., is pouring the station roof as subcontractor to Lynngate Con-

struction Corp., Jersey City. The job involves 19,300 sq ft of decking over a new two-story addition to the Hudson & Manhattan R.R. terminal. (Also, the same material that makes the roof slab is being poured for 7,300 sq ft of fill in the basement.)

Station roof-deck framing varies: Part consists of bar joists on 2-ft centers; part is of I-beams on a 5½-ft spacing. On the former, 4x8-ft sheets of  $\frac{1}{4}$ -in. Transite are merely laid down to form a tight sub-deck to hold the roofing mixture. On the beam-type framing, light rail-post channels (2 lb per lin ft) are first welded on 26-in. centers transversely, spanning from beam to beam as sub-purlins. Then, job-cut Transite

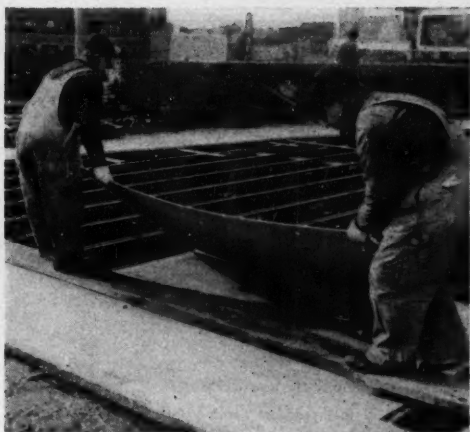


METAL CLIPS are hammered in to hold asbestos board tightly to joist's top chord.

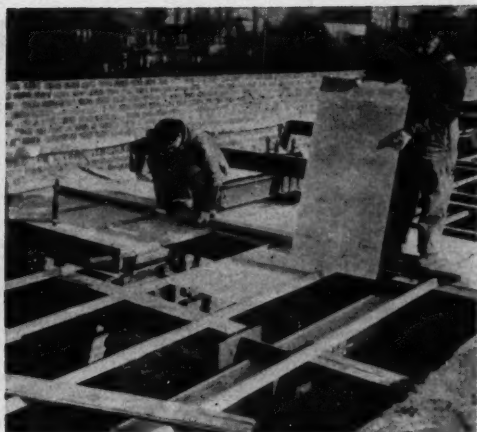


WIRE MESH is placed on sheets for extra safety so men won't fall through. Beams needed through wall are outriggers for bricklayers' scaffolds, which complicate work.





**TRANSITE SHEETS** are placed on top of bar joists to act as form for roof mixture, to which it will bond to give extra strength.



**SUB-PURLINS** on beam-type framing system are rail-post channels which support 1/4-in. sheets of Transite between their flanges.

sheets are placed between their flanges. For both types of framing, a 6x6-in. mesh of No. 9 wire is next placed over the sheeted area. This is not required for strengthening the slab, but is merely a safety precaution to prevent workmen from going through the brittle sheets or the weak, green deck before it sets up.

The roofing material, called Poretherm, is poured 3 in. deep on this prepared deck, where it bonds to the Transite so that both act together as a composite slab. Mixed in a plant at ground level, it consists of three bags of high-early-strength cement to 14 gal of water, plus the foam compound. The chemical, itself diluted 1 to 25 with water, is blown through a series of fine screens inside a tank from which it emerges looking much like shaving-soap lather. It is directed through a swing spout into one of two special mortar-type mixers in which the cement and water are already churned to a paste. The mixers



**JOB SUPERINTENDENTS**, Lynngate Construction Corp.'s A. Bonadona (left) and Porete Mfg. Co.'s Stanley Schinder, watch roof pour.



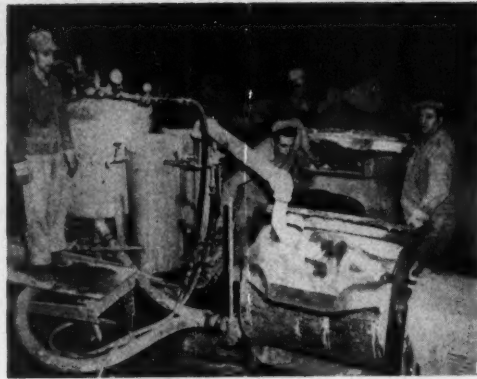
**CEMENT MIX** pours to roof deck from 2-in. hose, will next be screeded to 3 in. Complete deck weighs only 10 lb per sq ft.



**CRICKETS** for drainage are poured on top of 3-in. deck slab after it has set up. Whole will be topped with built-up roofing.



**SCREEDING OF SLAB** and of crickets (shown here) follows close behind pour, as soon as fast-setting fluid mix attains consistency somewhat like that of soft frozen custard.



**MIXING PLANT** that produces aerated cement-water mix consists of vacuum-pressure tank (left), foam generator (center), and two mixers. Mixer at rear is ready to be unloaded.

hold 12 cu ft, and are fitted at the bottom with a cylinder valve and hose connection for draw-off.

When the cement-water-foam mixture reaches desired consistency, it is unloaded from the mixer by opening the valve to let a vacuum suck the Poretherm into a large steel tank. After the mixer is emptied, 40-lb air pressure is applied to the tank to blow the mix 40 ft to the roof through 250 ft of 2-in. hose. Use of two mixers and one vacuum-pressure tank makes production fairly continuous.

The roof deck is poured in alternate 6-ft strips outlined by ordinary planks. These have a triple function: They act as forms to confine the pour; they serve as screed boards; and they hold the edges of the wire mesh (which is cut from a 6-ft wide roll) to keep it from curling. The Poretherm can be walked on the day following placement. After drainage crickets of the same material are poured on the flat slab, the deck is covered with a built-up roofing to complete the job.

## Spreader on Gradall Boom Sprinkles Iron Ore

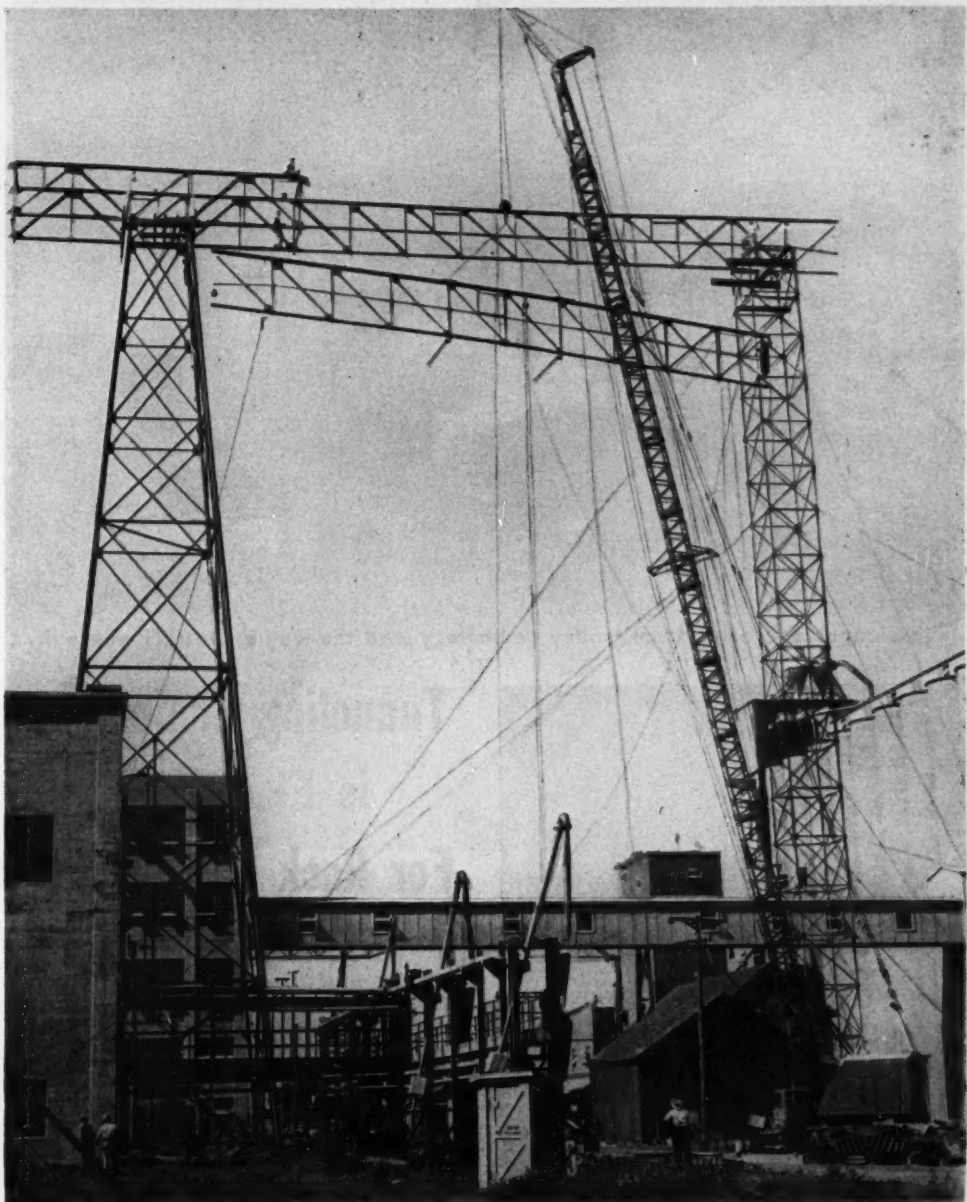


**UNPRECEDENTED WINTER-** TIME shipments of iron ore by rail were continued last season from Minnesota to the Chicago, Youngstown and Pittsburgh districts — and construction equipment played an important part in the operations. Fastened to the end of a Gradall telescopic boom, a mechanical spreader sprinkled calcium chloride in with iron ore loaded into gondola cars by Bucyrus-Erie 120-B shovel at Monroe open pit

mine of U. S. Steel's Oliver Mining Co. near Chisholm, Minn. This retarded or prevented freezing of ore until thawing stations were reached where perforated pipes were inserted into loads and steam forced through, furnished by four old steam locomotives. Tonnage had dropped with lake carriers frozen in during previous winters, but all-rail movement helped make up the difference, handling 3.7 million tons. (U. S. Steel photos)

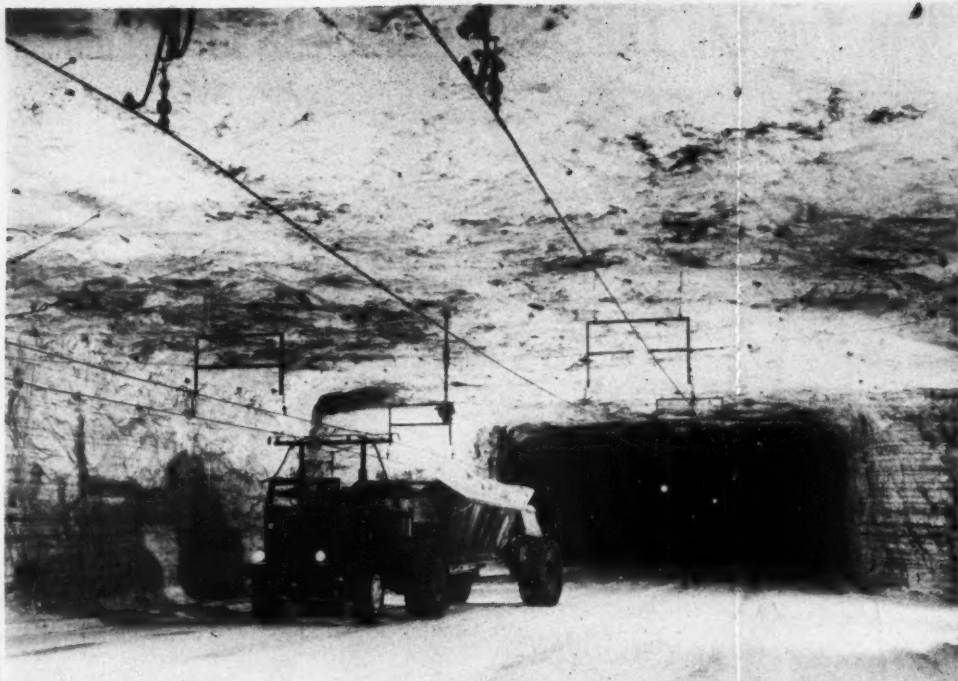


## Can You Top This 155-Ft Truck-Crane Boom?

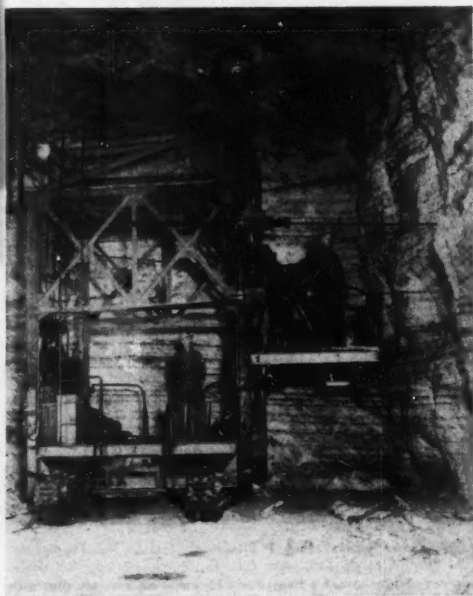


THERE'S 155 FT OF BOOM on this 20-ton Bay City CraneMobile with which Chism & Miller, Springfield (Ill.) steel erectors, are setting up a conveyor bridge in their home town. Only alterations made by the contractors to their Model 180 machine are lengthened and weighted outriggers, and cable trussing on all four sides of the boom. The rig can handle the 2- to 3-ton, 90-ft trusses at a 70-ft radius and, where required, swing through 360 deg to set them on the 146-ft towers. [Note temporary erection bent

of guyed tubular scaffolding.] Structural steel in the 740-ft conveyor bridge totals 130 tons. Due to rough ground, the boom is removed for traveling from point to point on the job site, with a second crane assisting in raising and lowering the 155-ft boom below half-height. Above this point the erection crane assumes full control. Contractor Don Chism says, "We enjoy any type of difficult erection job", so he must have got a big kick out of handling this one so successfully.



Euclid wagons operating from trolley or battery lead the way at Detroit where . . .



SALT MINING starts with drilling in 22-ft heading face with electric augers mounted on self-propelled electric-drive drill carriage. Holes are drilled 12 ft deep for light shooting. Shots are fired at midnight, end of second shift.

## Tunneling Equipment is Electrified For Rock Salt Mining

BY HAROLD W. RICHARDSON, Editor

YOU ARE DEEP below the surface in a rock salt mine, but it still gives you an eerie feeling to watch a loaded Euclid wagon slither away from the shovel without the usual roar of the diesel exhaust. You are startled as a bulldozer moves in to trim the muck pile. In silence except for a slight clanking of the crawlers.

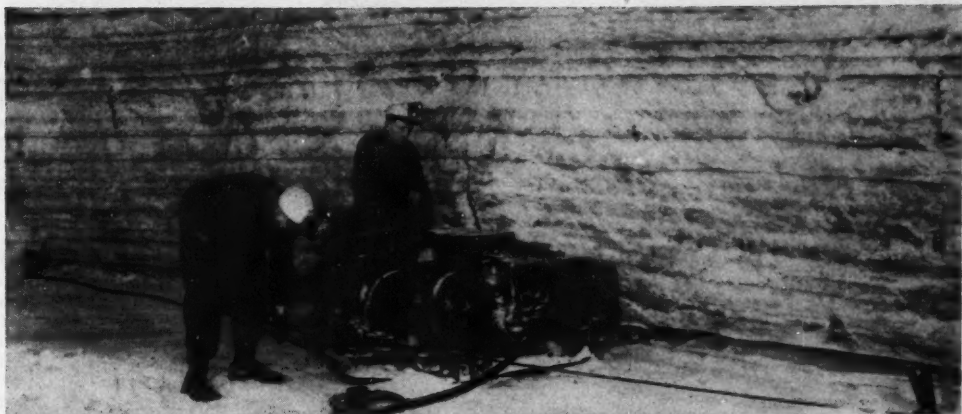
You are not aware muck loading has been resumed until you see the shovel dumping into another wagon that has slipped into position without a sound. Then you are certain you have lost your hearing as you notice two pairs of drills mounted high on a jumbo boring noiselessly into the face.

Here are all the elements of big scale tunneling carried on smoothly, quietly and efficiently with all electric construction equipment. Only the muffled boom of a blast in a nearby gallery mars the Stygian stillness. Noiseless dynamite is all that is needed to make the silence complete.

All this takes place in the Detroit mine of the In-

(Text continued on page 62)



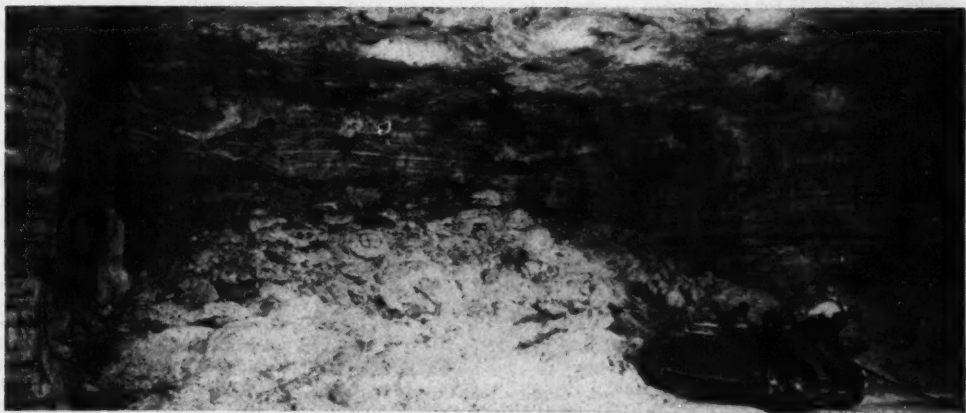


EACH FACE is undercut with Goodman electric-powered undercutter to maintain level floor. Anchored cable shifts cutter down the line.

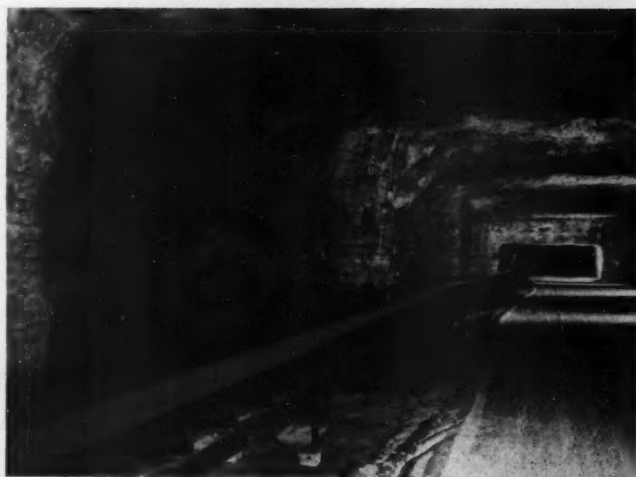


ELECTRIC-DRIVE Euclid wagons are loaded by 1½-yd Marion electric shovel. Wagons operate on battery in these workings. Right

now, new 2½-yd Marion shovel is being installed in mine to increase output. New shovel will be by ac drive to reduce line power drop.



BULLDOZER powered by electric motor keeps muck pile of blasted rock salt trimmed up for easy loading by shovel.



**ELECTRIC WAGON HAUL** ends at hopper over primary crusher (top). From primary gyratory, salt passes by belt to roll crushers for reduction to  $\frac{1}{8}$ - to  $\frac{1}{2}$ -in. size. Sized salt then goes by 30-in. belt (bottom) to shaft for lift to surface by skip hoist. Batteries on Euclid wagons are continuously charged whenever rig is operating from trolley.



**ROTARY DC CONVERTER** for equipment and trolley current is housed on rail cars within wall-enclosed room. Walls are built of rock salt blocks laid in fine salt mortar. Same type of walls close off long galleries for use as air ducts.

(Text continued from page 60)  
 ternational Salt Co., 1,153 ft below ground in suburban Detroit, not far from the Ford Rouge plant.

The job would be a tunnel driver's dream—headings, 60 ft wide and a mile long; smooth level inverts for perfect haulageways; 22-ft clearance to flat, unsupported ceilings; and no water, mud or bad ground to contend with.

#### **Euclids Replace Railroad**

After a conversion period of several years, International has recently changed its Detroit mine operations completely from narrow-gauge railroad underground haulage to electric-drive Euclid wagons hauling to belt conveyors. Wagon haul is kept within  $\frac{1}{2}$  mi of the belt end. Here are located primary and secondary crushers that reduce the salt chunks to  $\frac{1}{4}$ - to  $\frac{1}{2}$ -in. size range for belt transfer to a skip hoist at bottom of the 16-ft dia shaft. There are some  $1\frac{1}{2}$  mi of 30-in. main conveyor belt in the mine.

Key to the hauling operations are three 17-yd and two 24-yd Euclid bottom-dump wagons, each equipped with a 75-hp dc electric motor capable of operating from either a 250-v overhead trolley line or a storage battery. Each haul rig carries a 108-cell D8 nickel-iron-alkaline battery. The trolley is a horizontal contact shoe supported by two vertical air cylinders and held against double trolley wires 16 ft above roadway by a spring. The shoe is retracted by air pressure in the cylinders; when the air is released, it is automatically raised to position against the wires.

The rigs also carry two other small electric motors: One for powering the compressor supplying air for the trolley mechanism and the rig's air brakes and door closers; the other runs a hydraulic pump that supplies booster steering power.

#### **Air Closes Doors**

Euclid's usual tire-contact reel winding system for closing the dump doors has been replaced by air rams and cables. The hydraulic booster on the steering mechanism permits effortless turning in soft salt at the headings.

Trolley wires are strung down the main haulageways (two sets of wires for two-way traffic) leading out from the conveyor belt receiving hopper. When the wagons leave the haulage, they operate by battery to and from the working headings. Batteries are charged



MINE IS WORKED in grid system of 60-ft wide headings in both directions, leaving 60x60-ft blocks for roof support. Roof is 3 ft of salt below rock; note how salt breaks clean from top drill holes. Salt floor packs down to perfect roadway surface.



MEN ARE HAULED from shaft to work areas in these long trailers pulled by a Jeep, the only gas-powered equipment allowed underground. Working conditions are ideal—uniform year-round 58 deg temperature; no lost time from bad weather.

mostly during trolley-line haul periods, and at meal times, when the 250-v dc supply is fed through fixed resistances to the batteries. At the end of the two-shift day (midnight) the state of charge is determined from a reading of an amp-hr meter, and charging is continued as needed by the modified constant potential method with amp-hr control.

Mining is fairly simple. The mine is worked in grid fashion with 60-ft wide headings spaced 60 ft apart in both directions. Intervening blocks of salt 60 ft square are left in place as roof supports. Thus, three-fourths of the seam is mined

out, one-fourth is left in place. The salt seam is 26 ft thick, absolutely level and uniform. A 3- to 4-ft salt layer is left against the roof as top support, and a foot or so is left on the floor as a smooth roadway. Thus, the excavated headings are about 22 ft high. Experience has shown that in this particular mine, if the salt is removed clear to the rock roof, the roof becomes unstable. But with 3 ft of salt below the rock, the 60-ft flat roof spans seem to hold up forever. The salt is fairly hard, it needs no side or top support, and on the floor it packs down to an ideal roadway surface.

Holes 12 ft deep are drilled with

four electric augers from a crawler-mounted self-propelled electric-drive drill carriage. Though the holes are spaced 6 to 8 ft in both directions, and shooting is light, the salt breaks nicely into sizes easily handled by a 1½-yd Marion electric shovel. Each face is undercut at floor level by a Goodman undercutter. A small electric bulldozer keeps the muck pile trimmed up.

Blocks of rock salt can be built up into tight walls or brattices, with fine salt serving as mortar, for closing off rooms, galleries or headings. Abandoned haulageways are sealed off in such manner to form huge, but very serviceable, air ducts. Fresh air at the rate of 80,000 cfm is picked up at the bottom of a separate air shaft for distribution throughout the mine.

Details of operations are shown in the accompanying pictures.

The Detroit mine is operated under the direction of Harry M. Griffiths, vice-president for production, International Salt Co. at Scranton, Pa., and Leo E. Read, manager at Detroit.

**Ed. NOTE**—Reflecting in our editorial sanctum after seeing the above remarkable operations, it strikes us that here are some possibilities in large bore tunneling, utilizing the flexibility of electric truck or wagon haulage with the rigs working from batteries at the muck pile and at the dump, and tying into dependable trackless trolley power through the heading.



# EARTHMOVING...An Art and a Science

## 5. Factors Affecting Production

BY DAN K. HEIPLE, Chief Field Engineer, R. G. LeTourneau, Inc., Peoria, Ill.

This is the fifth of a series of articles on the fundamental principles of earthmoving. Sections on earthmoving history, job analysis, equipment selection, ownership and operating costs, and application of bulldozers, scrapers and rippers have already been published in our last four issues. Still to come are comprehensive articles on such subjects as production and cost estimates, equipment maintenance and repair, compaction, and application of other types of equipment.—THE EDITOR

ESTIMATING PRODUCTION of earthmoving machinery requires experience and judgment to evaluate properly a number of variable factors. The variables include: Rolling resistance, grade resistance, job efficiency, material weight and swell, rim-pull and tractive efficiency. Probably the most important consideration in hauling is rolling resistance.

**1** Rolling resistance is the sum of the external forces opposing motion over level terrain. It includes the variable effort expended in the action of tracks or tire sidewalls, the compaction or displacement of the roadway over which the unit travels and the re-

sistance due to roughness or irregularities in the road. The material from which a roadway is made, and its surface, are not so important as the relative firmness and freedom from undulation.

Since flexing of the tire walls must be included as a fixed action, the effort to move a load over a hard, smooth surface can be established as a minimum. All the power consumption in excess of that figure will be due to penetration in the travel surface, in its undulation or irregularities or a combination of both.

The value of rolling resistance for a particular surface can be expressed in pounds per gross ton of vehicle weight, and approximate

values assigned to common haul road conditions. As an example, an average construction road under big tires at 35- to 50-lb air pressure has been evaluated at about 100 lb per ton of rolling resistance. A 20-ton machine traveling over this type road would require 20x100, or 2,000 lb of rim-pull to overcome rolling resistance. It should be remembered, however, that to say there is one definite fixed rolling resistance for a particular type road is erroneous. Because of tire size, speed, and inflation pressure, the rolling resistance for a given road will vary. However, it is possible to assign general values to several types of haul roads. These may require adjustment for specific machines.

Some values for various road conditions with off-the-highway tires are:

Road Condition	Resistance (lb per ton)
Hard, smooth surface (well maintained)	40
Firm but flexible surface (well maintained)	65
Dirt roadway, average construction road (little maintenance)	100
Dirt roadway soft or rutted	150
Deep, muddy, surface or loose sand	250-400

(NOTE—Here, rolling resistance is a value assigned to the road. Under normal conditions it is applied  
(Continued on page 66))



# It's a cinch for a winch on TIMKEN® bearings

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## Wise Old Owl says:

**HOOT, MON,  
IT MAKES GOOD  
CENTS TO TAKE  
CARE OF YOUR  
CHAIN SAW!**



"Neglect is the worst abuse a chain saw can get. In ordinary times, the worst name you could call that would be *waste*; now it's a downright crime. Saws are already in short supply; parts hard to get. Figures show that approximately 70 percent of repairs to chain saws are caused by *damaged*—not worn out—parts. Most of this damage can be prevented. What can I as a chain saw owner do? It's as simple as one, two, three:

1. **KEEP IT CLEAN.** Every day I clean the sawdust, leaves and muck from my machine.
2. **KEEP IT OILED.** Regularly, and according to the book.
3. **KEEP IT SERVICED.** I watch my saw the way a mother watches her child's behavior. A bolt tightened in time may save many days in the repair shop.

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(Continued from page 64)

against loads carried by tires. It is not usually applied against a track-type tractor, but is applied against the wheeled unit hauled by such tractor.)

**2** Grade resistance is the term applied to the opposing force of gravity due to grade. It can be computed by simple laws of mechanics. The resistance varies directly with the angle of grade and weight of machine, and is 20 lb per gross ton for each 1% of adverse grade. Using the same 20-ton unit as in the 100-lb rolling resistance example, on a 5% grade, the grade resistance would be equal to 20x5x20 or 2,000 lb. This figure added to the 2,000-lb rolling resistance would give the total resistance of 4,000 lb to be overcome to negotiate the grade.

**3** Operator efficiency, being a human factor, is hard to determine. It will vary from day to day and from season to season. Many times an incentive wage plan will increase operator efficiency, but experienced men with pride in their ability are by far the greatest asset to operator efficiency. Coupled with delays due to unbalanced conditions of hauling and loading units or routing of equipment, operator efficiency results in a working hour of something less than 60 min. Experience has shown that more than 83% working efficiency, or a 50-min hour, is difficult to maintain for extended periods.

**4** Material in place, having weathered and settled, has comparatively few voids or air spaces in it. When this material is disturbed in loading, it acquires voids or swells. Because of this, the actual amount of material in 1 cu yd after it has been distributed is not as great as the amount of material in 1 cu yd in place. Since the pay-yard to the contractor is most always the bank-yard, or in-place yard, it is necessary to know the extent of swell in loading to estimate properly production.

In addition, various materials will stand on different slopes above the side sheets of the scraper or hauling unit. This angle of repose can be coupled with voids to give a single swell factor. In the following table, a factor of 90% is given to sand. Sand ordinarily does not acquire 10% voids, but neither will it stand on the 1 to 1 slope on which most heaped-scraper capacities are computed. The figure, then, is a compromise.



Rolling resistance is low on this Kenson, Michigan job . . .



. . . but spongy top makes it higher at Concrete, Washington

Multiplying the heaped capacity of a machine by the swell factor gives an approximate pay-yard capacity. If less than capacity loads are being attained, the figure must be adjusted accordingly. Swell factors for the major division of materials are given here. Common sense modification can be applied to mixtures.

Sand	90%
Common Earth	80%
Clay	70%
Shale broken or rock completely fractured	60%

Thus a scraper with a heaped capacity of 15 cu yd in common earth has 80% x 15, or 12 pay-yards nominal maximum.

**5** Weight of material limits speed and gradability with the available horsepower, and in special materials may limit the volume of the load. The approximate

weights of materials which could conceivably be handled by scrapers or hauling units is as follows:

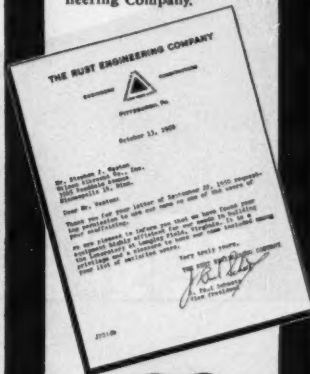
APPROXIMATE WEIGHTS OF MATERIALS (pounds per cu yd)	
Ashes—cinders	1000-1100
Bauxite	4000-4300
Clay (dry to wet)	2300-3000
Clay and gravel—dry	2700
Coal (Broken)	
Anthracite	1500-1600
Bituminous	1350-1400
Coke	800
Copper Ore—broken	3000-5000
Earth	
Loose	2100
Packed	2500-2700
Wet Packed	3000-3100
Gravel (dry to wet)	3000-3400
Iron ore—broken	3600-5500
Limestone—broken	2500-2700
Sandstone—broken	2300-2500
Shale	
Solid	4500
Broken	2500-2700
Slag—broken	2400
Stone—average crushed	2700-3000
Sand—dry to wet	2200-3300
Sand and gravel—loose packed	2700-3000

(Continued on page 70)

## YOU ARE COST MINDED!

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Read the hearty recommendations of Rust Engineering Company.



WACO

Here's one reason why WACO sectional scaffolding warrants such users. It has no loose parts. For example a project which requires 250 end frames:

WACO requires—750 parts  
Scaffold No. 1—2250 parts  
Scaffold No. 2—1250 parts

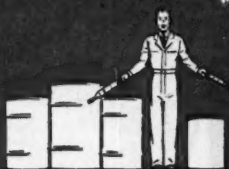
. . . BUT—still the biggest reason for WACO's superiority is the WACO SPEED-LOCK METHOD of assembly.

WACO

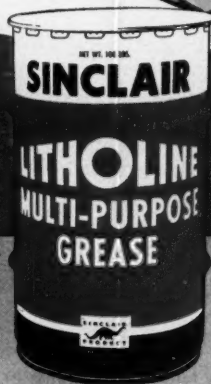
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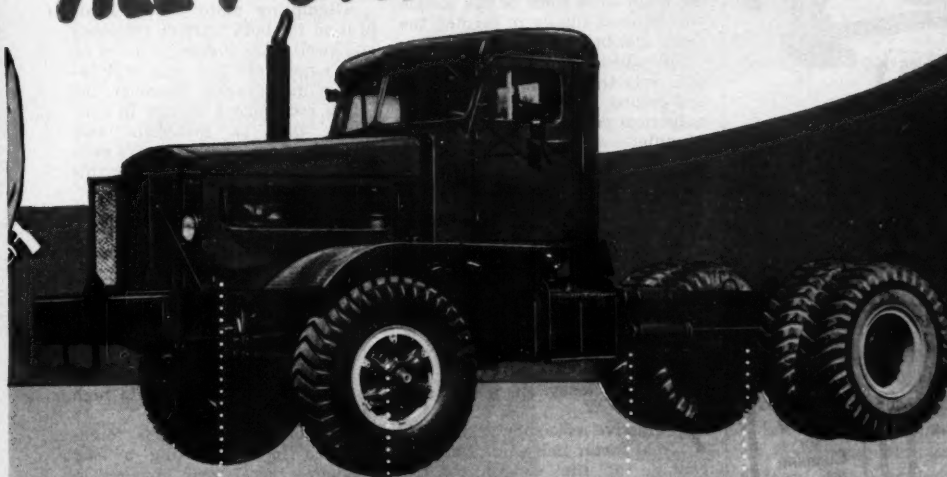
- SUPERIOR LUBRICATION AT EVERY POINT
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(Continued from page 67)

**6** Rim-pull or track-pull is the pulling force that the engine can deliver to the tires or tracks at the point of contact with the ground. A formula for computing rim-pull can be derived logically. The torque of the engine is multiplied by the over-all gear ratio of the driving train, giving a turning force at the axle in ft.-lb. This force is divided by the effective lever of the wheel or track sprocket (the rolling radius) in ft. The total is reduced by the mechanical efficiency of the driving train since some of the torque will be used simply in turning the gears and bearings.

Substituting more readily available data than torque, gear ratios and rolling radius, and combining numerical constants results in the formula:

$$\text{Rim-pull} = \frac{\text{HP} \times 375 \times \text{Efficiency}}{\text{MPH}}$$

Horsepower used is belt; and efficiency, if unknown accurately, can be estimated at 75 to 85% for various gear trains. The portion of this force that can be actually converted to tractive power is drawbar pull, which brings up tractive efficiency.

**7** Tractive efficiency is a decimal factor indicating the percentage of the weight on the driving tires or tracks which can be utilized as pulling or pushing effort. The efficiency or tractive coefficient varies with grouser or tread design, and with the type of material on which the unit is operating.

Some approximate figures of tractive efficiency on various surfaces are:

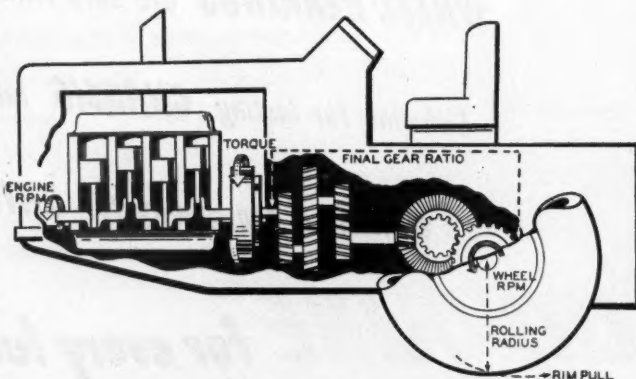
Surface	Tractive Tires	Efficiency (%) Tracks
Dry rough concrete	80 to 100	45
Dry clay	50 to 70	90
Wet clay loam	40 to 50	70
Damp sand and gravel	30 to 40	35
Loose dry sand	20 to 30	30
Dry snow	20	15-35*
Ice	10	10-25*

\*Semi-skeleton shoes

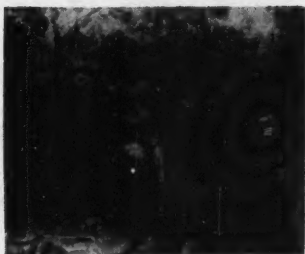
Attempting more exact classification for both tractive efficiency and swell takes judgment based on long experience and may still result in inaccuracies. However, the tables recognize a change in condition due to materials and, generally speaking, will give estimating results in a reasonable range.

**8** Acceleration is a time consuming factor requiring an excess of rim-pull for any given condition over that necessary just to roll the load. If this excess does not exist to overcome the inertia of a machine and its load, the unit will not be able to increase its speed from the low point to high in a given gear.

The computation of the forces involved in accelerating a load through several gear changes in a given time is rather involved. However, experience has shown that if an excess of rim-pull in the amount of 20 lb per ton is available in the top hauling gear, the prime mover will exhibit good performance characteristics. Then



RIM-PULL, pulling force which engine delivers to tires or tracks at ground contact point, is affected by torque, gear ratios, friction losses, and rolling radius of driving wheels.



EXCESS RIM-PULL and low traction combine to spin special sand tread tires in slick mud.

a fixed time of 1 min for gear shift and acceleration covers a sufficient range to be considered average, and may be used for estimating purposes. Actually, each 10 lb per ton of excess rim-pull gives an approximate acceleration of 0.1 mph per sec. In lower gears where the excess may run to 100 lb per ton, a given machine might accelerate to 10 mph in 10 sec. On the other hand, with only a 20 lb per ton excess, it would take about 50 sec to go from 20 to 30 mph. The actual time of acceleration, then, in high-speed hauling, may run over 1 min. However, a machine on such hauls moves a considerable distance while accelerating. If no allowance is made for this travel, and the unit is figured to have covered the total haul distance at the average hauling speed, the two will tend to balance out, and the 1-min allowance may be used rather than computing acceleration separately.

\* \* \*

Ed. Note: The sixth article in this series will appear in the June issue.

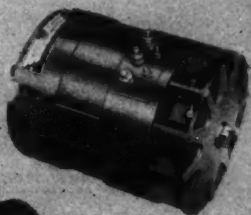
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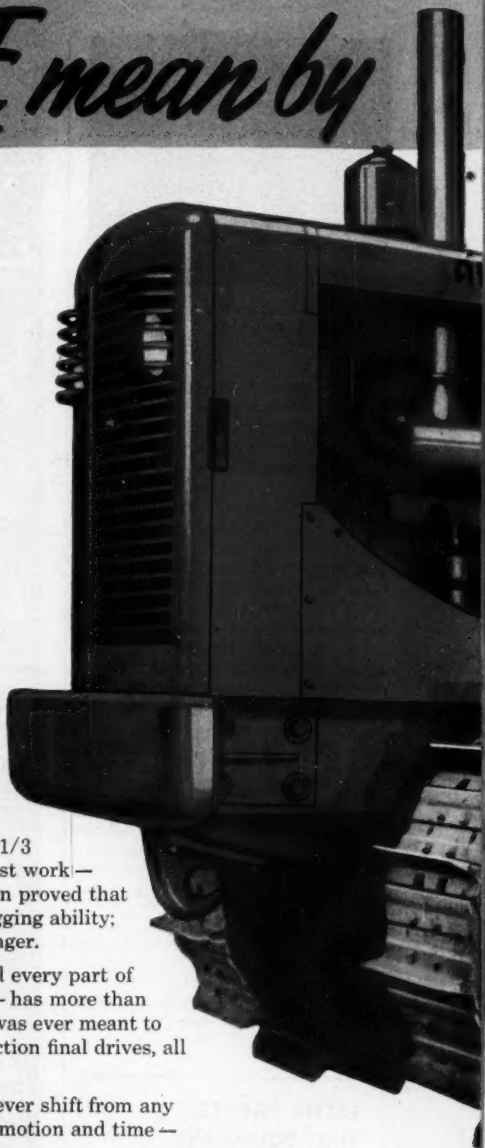
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TWO OF FOUR tubular steel hoist towers serving 22-story apartment house in Chicago. Each tower is divided into two shafts, one for concrete skip, other for combined men-and-materials cage carrying

signalman in contact with hoist operator by two-way Teletalk. Note Chicago boom at top of each tower. When boom is in use, cage is spotted alongside so signalman has full view of hoist operation.

## Safety Built into High Tower Hoists

**"NOT SAFE FOR PASSENGERS"** doesn't apply to tubular steel tower material hoists on several high building projects in the Chicago area. Robert Twyman, of the Thomas Hoist Co., Chicago, developed the combined men-and-material hoist at the instigation of McNally & Quinn, architects. A typical example of this type of hoist installation is found on the 22-story apartment being built at 1350 Lake Shore Drive, Chicago, by S. N. Nielsen Co., general contractor.

Here four two-shaft tubular steel

By **ROBERT L. MOORE**  
Engineering Consultant  
Lumbermens Mutual Casualty Co., Chicago

tower hoists, each powered by a 90-hp electric-drive 3-drum hoist are serving the job. Safety features include: A signal man riding the combined men-and-materials cage at all times in constant contact with the hoist operator through a two-way Teletalk system (the only signal the operator gets); a visual drop annunciator on the cage tied in with call buttons on

each of the 22 landings; overspeed brakes on the hoist; anti-backup brake on the hoist motor; double hoist lines on the cage from a divided drum on the hoist; safety dogs on the cage roof that grip the guides in case of cable breakage, and indicator dials on the hoist drums to show the location of the load.

Knowing full well that the "No Passengers" rule for materials hoists is often violated, the Nielsen Co. decided to make these hoists safe for men and materials alike. Details on this particular installa-



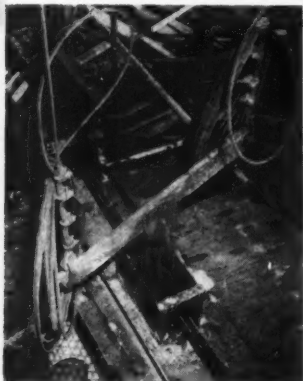
SIGNALMAN riding cage at all times (left) gets call from push-buttons at each floor landing through Auth drop-signal annunciator, and relays oral instructions to hoist operator (right) by two-way



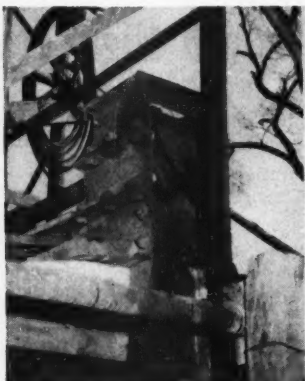
Teletalk system. Loud-speaker system is normally set for talking from cage and listening at hoist, but operator can talk back to cage by pushing a button, as shown here.



COUNTERWEIGHTED GATE on cage, operated by signalman, protects both men and materials during hoisting.



DOUBLE HOIST LINE from divided drum is tied into cage roof through equalizing bar (left) that compensates for irregularities in winding or unequal stretch in cables. Equalizer is fastened to dogs that grip guide rails (right) in case of failure of both cables.



tion were worked out jointly by the general contractor, the Thomas Hoist Co., and Roberts-Stage Electric Co., electrical subcontractor on the job. A lot of advance planning made sure that these four hoists would work safely.

The American Standard Safety Code for Building Construction (A10.2—1944) covers proper design and construction of both materials hoists and workmen's elevators.

Most of the code requirements were met on the Chicago job. Where the design deviated from the code, full agreement was reached by all concerned before such details were adopted. The author warns, however, that the ban against carrying passengers on conventional material hoists should be rigidly enforced, for such installations are neither designed nor built to handle both men and materials.

Each tubular steel tower is divided into two shafts and carries a Chicago boom at the top. One shaft is for the men-and-materials cage, the other is for a concrete and mortar skip automatically dumping into a hopper fixed at desired floor level. When the Chicago boom is being used, the cage is dogged off alongside the boom to provide full view of hoisting operation for cage signalman who transmits hoisting instructions to the operator by the Teletalk system.

Details of the safety features are shown in the accompanying pictures.

As the project nears completion, there has been no reported injury to any workman. Much time has

(Continued on page 79)



# GENERALS

do any job, anywhere —  
**FASTER! EASIER!  
AT LOWER COST!**



**THE  
GENERAL  
L.C.M.**



## GENERAL L. C. M.

For most work off the road, some on. Broad, deep lugs and thick, rugged shoulders prevent cuts, snags, bruises. More rayon cords, more rubber for extra carcass strength.



**THE  
GENERAL  
H.C.T.**



## GENERAL H. C. T.

Designed for most work on the road, some off. Long-wearing safety tread and reinforced shoulder cleats give more traction, more original and recap miles.



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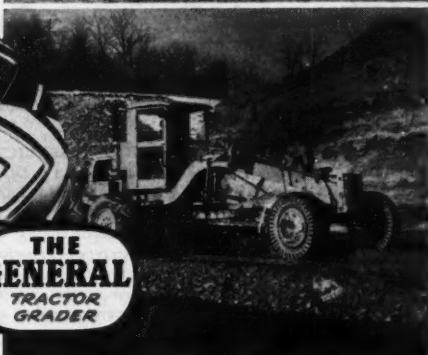


## GENERAL DUAL TRACTION LUG

To move more yards of dirt, the General Dual Traction Lug digs deep for more traction in soft going, forward or backward. Makes heavy jobs easy.



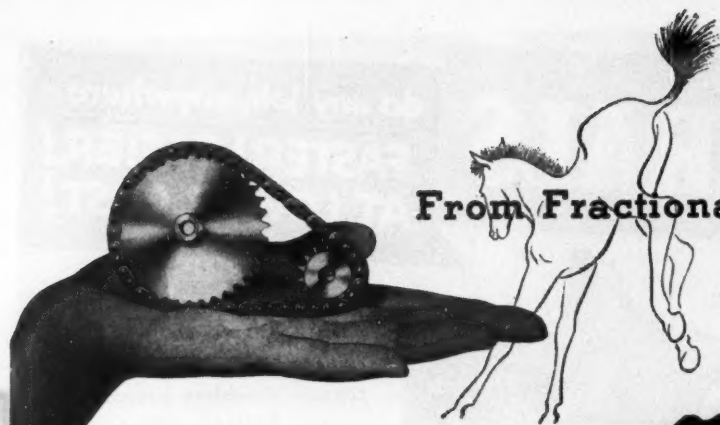
**THE  
GENERAL  
TRACTOR  
GRADER**



## GENERAL TRACTOR GRADER TIRE

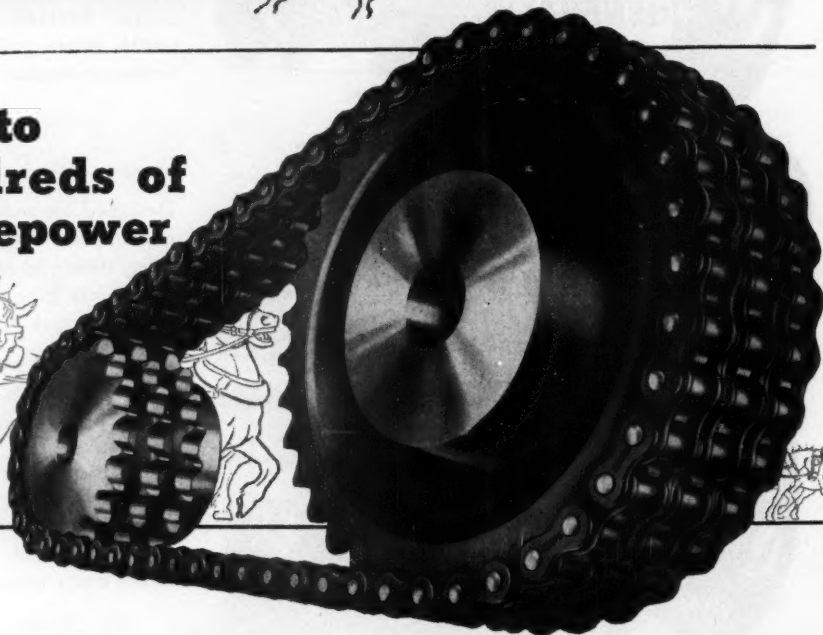
For power wheels—sharp, diagonal, self-cleaning tread bars for maximum traction, forward or backward. For front wheels—easy steering, smooth riding ribs.

**SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT**



**From Fractional Horsepower**

**to  
Hundreds of  
Horsepower**



## **Whitney Chain Drives Simplify Design—Cut Costs**

No matter what your drive problem, be it small movie cameras, machine tools or earth movers, you will find a Whitney Chain Drive to fill the application exactly.

And what's more, these adaptable drives offer opportunities for important cost reductions and improved performance. For example—Whitney Chain Drives operate equally well on long or short centers. They will drive single or multiple shafts, provide accurate timing or reversal of direction. Standard attachments, built into the chain, offer still more opportunities for economical application possibilities.

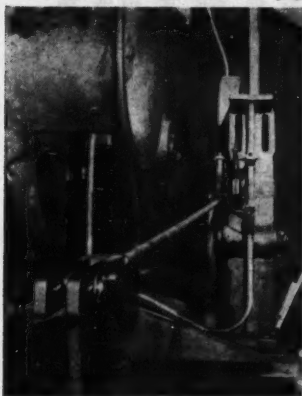
And remember, Whitney Chains... *the all-steel drives*... deliver full rated power, smoothly and dependably. Their positive grip transmits constant, uniform speed. They are easily and quickly installed,

reducing costly down time. No removal of shafts or bearings necessary. Alloy steel construction assures maximum service with minimum maintenance.

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### **WHITNEY CHAIN COMPANY**

222 Hamilton Street, Hartford 2, Connecticut



**SAFETY FEATURES** on hoist include: Left—Simplex hoist controller that shuts off current and applies brake in case of overspeeding or running past normal top and bottom limits; Center—Dial indicator for each drum that automatically shows position of cage or skip; Right—Backup brake on 90-hp electric hoist motor prevents motor from reversing.

been saved by both general and subcontractors by the hoist installation. A most satisfactory arrangement for use of the hoist facilities by subcontractors calls for the subs to pay the general 25¢ per day per each man they have on the job. The

general contractor says that this nominal charge has more than paid for the installation costs. Everybody is happy and nobody got hurt.

Carl Jorgensen is project manager for S. N. Nielsen Co. on the \$6,500,000 general contract. Frank

Novak is electrical superintendent for Roberts-Stage Electric Co., who did the electrical work on the hoists and are electrical subcontractors on the job. Thomas Hoist Co. supplied, erected and installed the towers and electrical hoists.

## Two More Accidents That Could Have Been Avoided



**CONSTRUCTION ACCIDENTS** are happening all the time. Here are two that might have been prevented, snapped by one of our editors during his recent wanderings with camera in hand. In the first instance, on a Pennsylvania Turnpike paving job, one of the two hydraulic dump jacks gave way while the truck was discharging 15 yd of sand. The resulting body twist tipped over the huge truck, warping the frame so badly that it had to be completely replaced. Investigation showed that the driver had backed his right set of

rear duals up on a mound of sand instead of taking time to find a level spot. The unbalanced lift undoubtedly caused the hydraulic plunger failure. Fortunately no workmen were close enough to be injured. There are two morals to this story: Make sure you're level before you dump, and stand clear of vehicles when they're unloading.

In the second instance nobody checked tire pressures for quite a while on bottom-dump Euclid wagons, so one fully-loaded rig just walked out of a tire—and

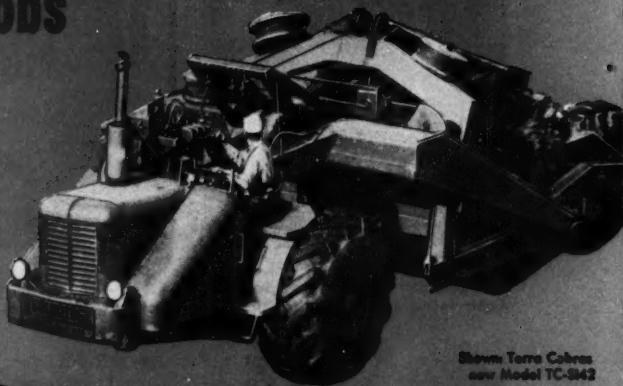
ruined it—on a section of the New Jersey Turnpike. For the price of the tire and time and money lost during resulting down-time, the contractor could well afford to pay a tire checker's salary for a good many weeks.

These are only two accidents, which occurred when the cameraman happened to be right there. Hundreds more take place every day. They're costly enough ordinarily, but with tighter equipment deliveries due to the mobilization effort, it would pay everybody to be more cautious.

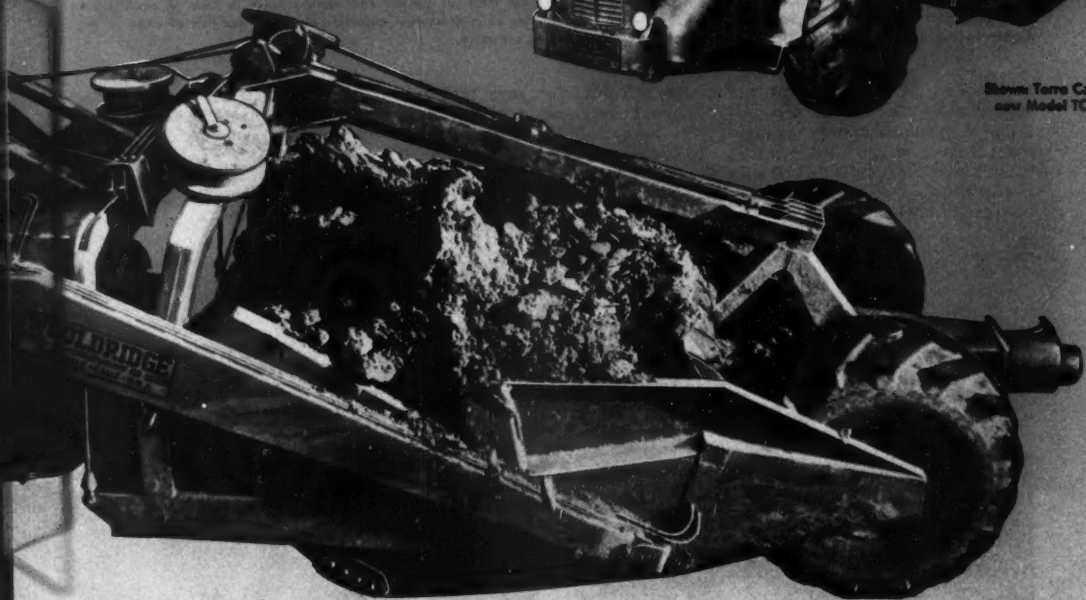
# BIGGER PAY LOADS

... on toughest jobs

Shown are two of the big, more powerful Wooldridge Cobras equipped with 24.00 x 25 low pressure tires, used in preparing a 200-acre industrial site, access roads, railroad sidings, parking areas, etc., for the Wabash Railroad and Ford Motor Company near Birmingham, Missouri.



Shown Terra Cobras  
new Model TC-S142



Swords-McDougal, one of Illinois' top earthmoving contractors, took on the job of moving 1,200,000 yards of tough, wet, sticky clay abounding in the hilly rocky Missouri River Valley region. Again, they turned to Wooldridge Terra Cobras. Job records justify their choice. Three new Model TC-S142 Cobras, and three 5-year-old Model TA Cobras still going strong, were put to work on grueling 20-hour-day schedules. The big new Cobras averaged 13 PAY YARDS per trip, with daily production exceeding

15,000 pay yards over the 2500-foot cycle . . . loading in 45 seconds, and discharging the sticky clay in less than 30 seconds. Performance like this spells profits . . . profits you can enjoy if you'll figure your next job on the basis of low-down-time, rugged stamina and high production of the greater new Wooldridge Cobra. Talk it over with your Wooldridge Distributor today . . . or write for the complete Cobra story now! WOOLDRIDGE MANUFACTURING COMPANY Sunnyvale, Calif. • 5345 N. Winthrop Ave., Chicago 40, Ill.

# WOOLDRIDGE



Terra Cobras



Terra Cobras Wagons



Power Control Units



Scrapers



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Bulldozers



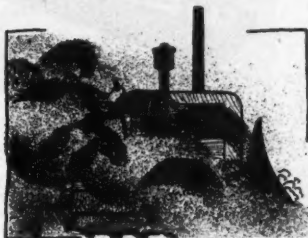
# THE MAINTENANCE SHOP

A monthly equipment service and repair feature

## Watch Your Air Cleaners

WITHOUT A DOUBT more words will be written and spoken in the next few months on the matter of preventive maintenance than most of us will want to see or hear. The proper care and operation of our equipment seems to be a distasteful subject. Nevertheless, if we are to have the amount of equipment we want to do the work to be done, this subject must become a reality.

Just recently this writer visited a job on which a variety of earth-moving equipment was being used. It was in a semi-arid section where dust conditions were continuously bad. Engine trouble caused considerable lost time, and inquiry showed that the important item of air-cleaner servicing was not good at all. Cleaners and connections were being serviced once a week, regardless of the number of hours' operation in that week. Well, just once a week is no good any way



you look at it. Conditions of the surrounding air are the determining factor. If working conditions are ideal and the air is free from excessive dust, then a haphazard procedure for air-cleaner service just might let you get by. Where conditions are severe and the air is heavily laden with dust, a servicing procedure must be made to fit the job. On this particular job I recommended that filters and connections be cleaned at least every 4 or 5 hr, depending upon the shift length and eating-time break. The superintendent and the contractor still maintain I am nuts.

BY HOMER C. CAMPBELL

Service Manager

H. W. Moore Equipment Co., Denver, Colo.



And I will go along with that, but not as it refers to their dust conditions and service procedure on air cleaners. The evidence is on my side, as shown by their own figures on motor down-time.

There is a place to put responsibility for the once-a-week story, and that is with the manufacturers, in some cases. However, our own sense of survival should dictate the proper procedure for trying to save a few of our own dollars, as well as our machines.

### Alter Service to Suit

After returning to the office from this trip, I reviewed the manufacturers' recommendations for air cleaner servicing. I found that they vary from 4 to 60 hr, with a footnote here and there to the effect that local conditions may dictate more frequent cleaning. This is a case where a preventive maintenance program must be flexible. It is a condition that will require co-operation of the job superintendent, the master mechanic and the contractor. They must analyze the dust and dirt conditions. I don't mean they must get technical, but common sense and a few inspections of air cleaners on the job will soon indicate the frequency with which these cleaners must be serviced. If the required schedule is not

followed, machine down-time will be excessive.

We lent a hand recently on another job where dust is definitely a serious problem. Several tractors are working 7 days a week, 8 hr per day, continuously in a cloud of dust. To aggravate the condition, this foreign material is about 5% metal and will pass a No. 200 screen easily. Lost time was so great and costly from the standpoint of parts and labor that we had to find a remedy fast. We installed dual air filters, one ahead of the other, with the second one in the least contaminated area we could efficiently place it. This, along with a rigid servicing program, has materially assisted in keeping out the dust and metal. And it just might set up some figures on lack of down-time that will be astounding.

As we have said in earlier issues, parts are not going to be too



freely obtainable. You may rest assured that aluminum pistons will be hard to get, engine bearings are going to be scarce, and all parts will be more or less critical. Therefore, the only reasonable thing to do is to give your equipment proper care, and do what you can to get it properly operated. Then you will get more production with less down-time, and be able to carry on with the equipment you now own. This equipment will now have to haul larger loads faster and longer. Give your machines a chance and they will do it—and economically.

You haul more loads...more miles...*for less!*

*when you "grease on the go" with*

## ALEMITE

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**You Save Time** by bringing complete power lubrication to trucks, tractors, equipment right on the job! Air-operated pumps deliver grease "refinery clean" direct from barrel-to-bearing.

**You Save Money** by cutting the costly "downtime" required for lubrication, thereby increasing the output of both your men and equipment.

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Add 'em...group 'em into just the rig you want!

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You can suit your needs exactly with Alemite! Whatever selection of chassis or gear-oil pumps and reels you require for 100 lb. drums, you can easily combine them into one portable rig for on-the-job lubrication!

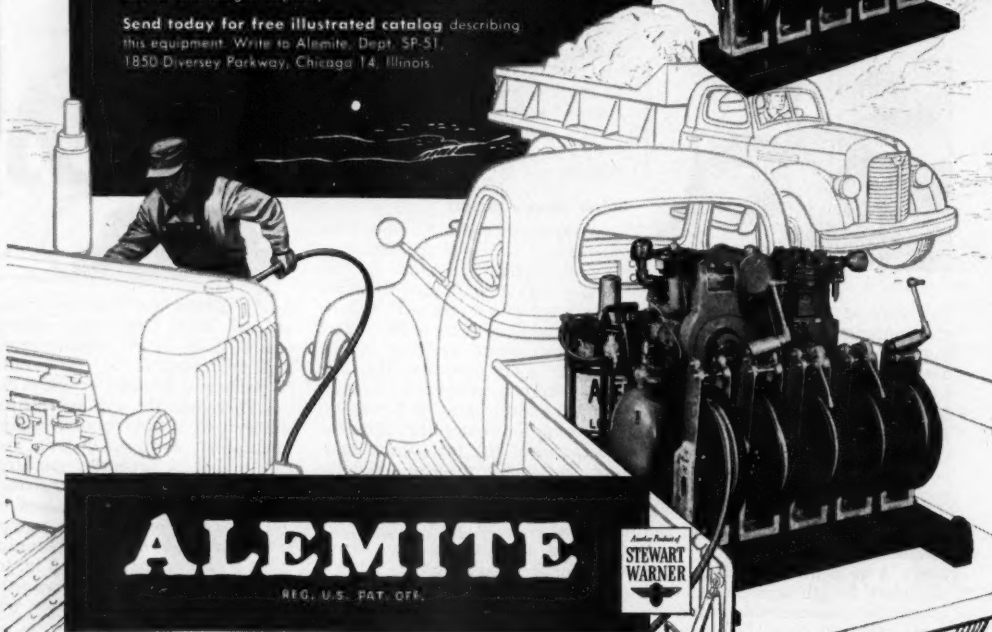
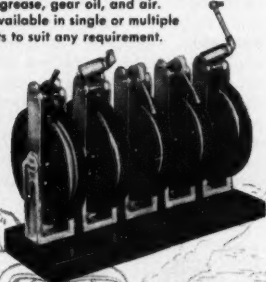
Other Alemite Portable Service Stations are also available for 400 lb. and 54 gal. capacity drums.

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# ALEMITE

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## Spring Tonic Peps Up Tractor Performance

By FRED O. SCHRECK

Supervisor of Service, Industrial Power, International Harvester Company

THE BEST SPRING TONIC for crawler tractors is a little preventive maintenance to insure high output during the torrid summer months ahead. Here are a few steps which, if undertaken now, will save repair dollars and downtime later on.

Engine lubrication is the logical place to start. Old oil, which is dirty and diluted by cold-weather starting, should be changed to recommended summer grade. It is important that the engine be hot when draining old oil.

Another major step that should be done without fail is draining and flushing the cooling system. It is a good idea, after draining the anti-freeze, to fill the system with a solution of from 5 to 10 lb of ordinary washing soda and

and loose blades and check the fan hub mounting capscrews for tightness. Clean the spaces between the radiator fins by blowing them out with an air hose or flushing them with a water hose. Many a cracked block has resulted from overheating due to clogged radiator fins.

While you're about this spring tonic job, clean and refill the air-cleaner tray. In refilling use about one-half oil and one-half kerosene. This allows a better flow of air to the manifold without reducing the cleaning efficiency of the unit. Air-cleaner connections should be tightened and the pipe from cleaner to manifold should be examined for holes or cracks. Abrasives entering the engine from improperly filtered air can cause serious damage to rings and sleeves.

On tractors with gasoline starting systems, it's good procedure to check the gasoline strainer, then clean and wash the bowl at the same time. Distributor and magneto points should be checked for wear and correct gap setting. To insure fast starting, lubricate the magneto impulse coupling with kerosene or light machine oil.

Look at the diesel fuel water trap, too. It may be time to take it apart and clean it. Replace oil filter elements. In most crawler tractors, these elements should be replaced with each oil change.

Another good tip for spring and the year around is to service your battery. Clean the terminals with hot water and baking soda and steel wool, when necessary. Then coat them with vaseline. Be sure that the cells are filled with distilled water to  $\frac{3}{8}$  in. above the separators.

If the battery water level is constantly low, it may be a sign that it is being overcharged. The charging rate should be investigated and adjusted at once to prevent serious damage to the battery.

If transmission and final drive lubricants have not been changed for a season, now is the time to do it. If the oil in the transmission and final drive has been thinned during the winter for easier operation, the lubricant certainly should be changed to a heavier grade

(Continued on page 86)



water, depending on the size of the engine. Leave off the radiator fill cap and operate the engine until the water is hot. Then drain and flush with clean water. Refill with soft or rain water, if possible, and the recommended amount of rust inhibitor.

Next check the water hose clamps for leakage, and tighten where necessary. Another excellent check for leakage is this: Remove the fan belt so that the water pump will be inoperative. Fill the radiator to the top, leave off the radiator cap, and, while the engine is running, hit the throttle hard and watch for air bubbles. If bubbles appear, it's a good indication of leakage around the cylinder head gaskets.

While conditioning the cooling system, check and adjust fan-belt tension. Inspect the fan for bent



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**A 200-HP Cummins Diesel**

— High top speed (25 m. p. h.), plenty of lugging power. Compression release for quick starts.

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— Makes steering effortless. You can turn the Heiliner with one hand in a 22-foot radius.

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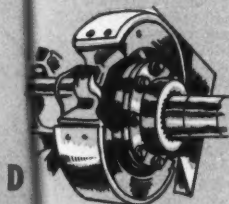
A



B



C



D



E



F



G



# Heiliners!

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Mocksville, N. C., calls the HEILINER:

*"... the finest piece of dirt-moving equipment which is built today"*

## Another Heiliner user moves more dirt, faster, at less cost

1800 pay yards per ten-hour day on a 1600-foot haul!  
That's profitable performance — and the kind delivered by each of two Heiliners on a highway by-pass job in North Carolina. Soil was mostly clay with some sand and boulders. Other rigs on the same project averaged only 1200 to 1300 cu. yds. per day. That's a 500-yard margin of superiority for each Heiliner!

Putting more pay into pay dirt is nothing new to Heiliners. They've been carrying bigger loads at lower costs per yard on all sorts of jobs across the country.

Heiliners are available with either an 18-cu. yd. scraper or a 20-cu. yd. bottom-dump wagon — both interchangeable. Get the facts on each model at first hand. Have your Heil road-machinery distributor put a Heiliner through its paces for you. Call him for a demonstration today.

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Make your replacements with Marvel-Schebler Carburetors. They are now original equipment on many industrial engines and tractors, because they give maximum dependability and economy.

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Hauling as much as 2500 lb. loads STRAIGHT UP at 178 f.p.m. takes dependable power. And the hoist of this Portable Builders' Tower, built by Clyde Iron Works, and powered by a Wisconsin Heavy-Duty Air-Cooled Engine, delivers it.

Builders and buyers of equipment naturally STANDARDIZE on Wisconsin Engines, especially where you need a steady pull on a long haul. For example, tapered roller bearings at both ends of the crankshaft eliminate radial and end thrusts. And, you have no cooling troubles, because of fool-proof air-cooling at its best in any weather.

An OUTSIDE magneto with impulse coupling delivers sure-fire starting at slower cranking speed. Heavy-duty construction throughout assures you of heavy-duty service year in and year out . . . and more profit in every contract.

4-cycle single-cylinder, 2-cylinder, and V-type 4-cylinder models, 3 to 30 hp. Write for information.



**WISCONSIN MOTOR CORPORATION**

World's Largest Builders of Heavy-Duty Air-Cooled Engines  
MILWAUKEE 25, WISCONSIN

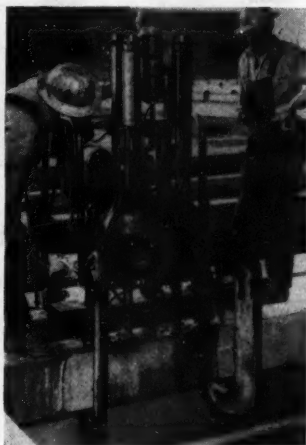
(Continued from page 83)

before hot weather. Work the tractor until the lubricant is warm, then drain. Refill with the proper grade of oil in accordance with the manufacturer's recommendation.

Another item you can check by a quick inspection at this time is the track assembly. If the track is too tight or loose, excessive wear will result. Adjust tracks to the type of soil in which the tractor is operating.

These preventive maintenance suggestions are not expensive nor time consuming, and can be followed in the field.

## Holes Drilled At a Fast Clip



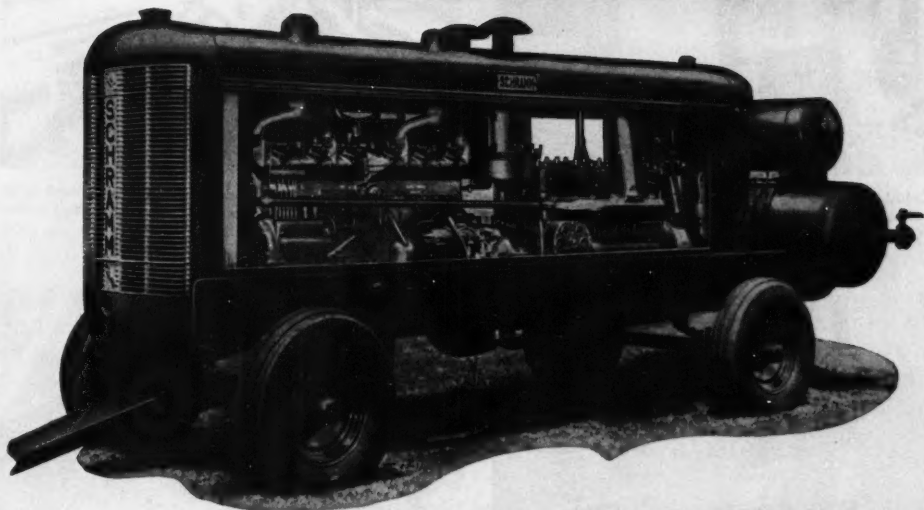
IF YOU WANT to drill 5,000 holes in concrete in a hurry, you need a special rig to do it. So reasoned the National Steel & Shipbuilding Corp. of San Diego, who built their own machine to drill holes for 5 mi of hand railing at the Hyperion activated sludge plant at Los Angeles. The 2-in. dia. 6-in. deep holes were to be drilled in 8-month-old concrete.

The rig uses Termite rotary masonry drills and puts down either one or two holes at a time under hydraulic pressures of 60 to 80 lb. Power is from a 1-hp Wisconsin engine. Production is up to 10 holes per hr per drill; and each drill lasts for 30 holes. A spray of water on each drill serves as a coolant.

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### **Diesel Engine Driven Air Compressor**



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Pneumastat, simple and rugged . . . Proper Speeds . . . Less horsepower required . . . Cam operated mechanical intake valves, greater volumetric efficiency. There you have some of the many features in the new Schramm Model 600 Air Compressor . . . features that mean economy while supplying you with 600 cubic feet actual air delivery.

#### **SIMPLIFIED DESIGN**

You will like its streamlined, simplified design, too—fewer parts . . . watercooled enabling operation with doors closed . . . Dual fan belts . . . Engine and compressor speeds designed to operate at maximum Diesel Engine efficiency.

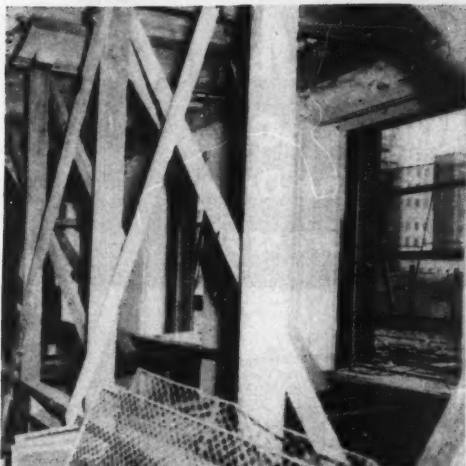
*Don't delay. Write today for Bulletin 5025 on this great, new Model 600 Schramm Air Compressor.*

# **SCHRAMM INC.**

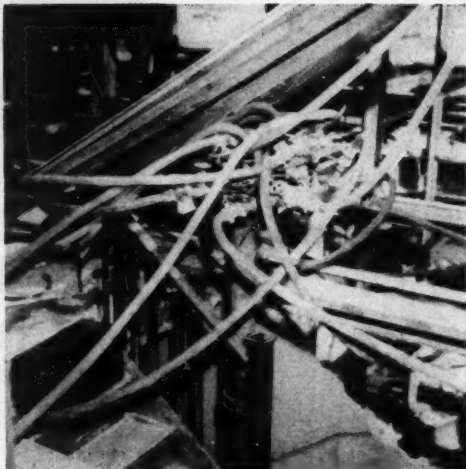
*The Compressor People*

**WEST CHESTER**

**PENNSYLVANIA**



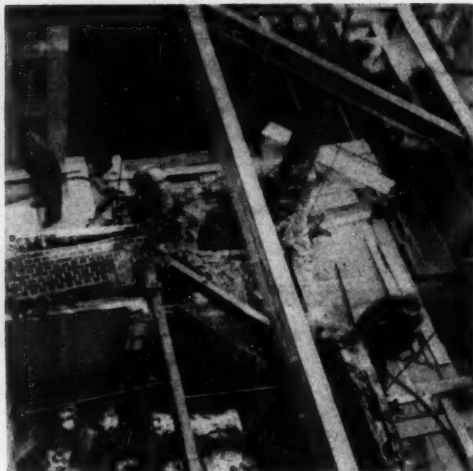
**CATCH-ALL SCAFFOLDS** (left) are first order of business in demolition of world-famous Ritz-Carlton Hotel and Carlton House in New York City. Plank deck is spiked to converging stringers braced to



beams above. Compressors feed air through riser in stairwell to 16-part manifold up top (right). Slanted door prevents falling objects from injuring gages (and your editor's camera case on stair).



**TWELVE TO SIXTEEN JACKHAMMER CREWS** follow three stories behind partition crews, literally knocking floor out from under each other. Burner looks around for tierods and reinforcing to burn off.



Meanwhile, crews on scaffolds hung from outriggers above keep pace with deck counterparts (right) tumbling exterior brick inside. Note doors in window opening to prevent rubble from falling outside.

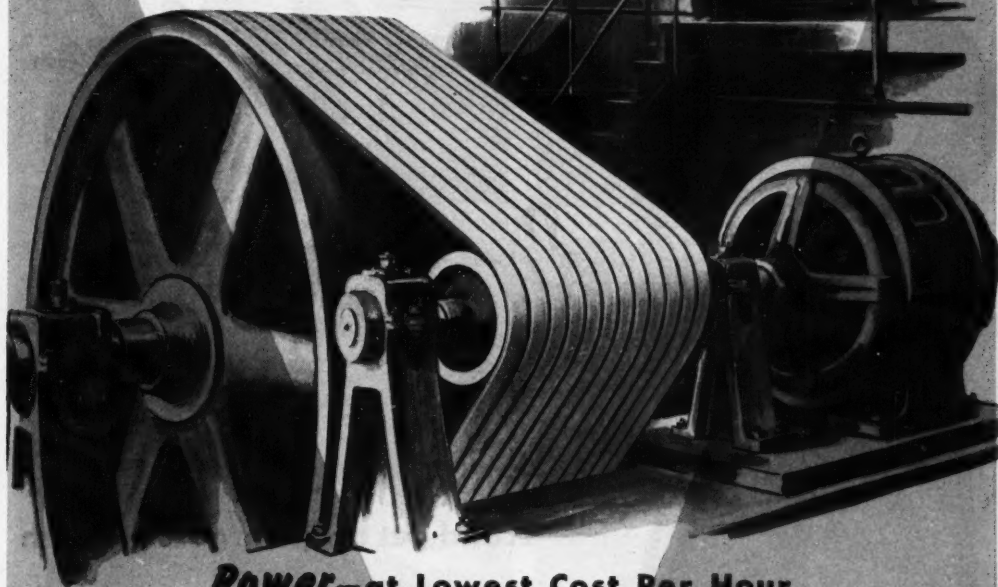
## Wrecking Crews Demolish New York's Famous Ritz-Carlton Hotel

By JAMES M. CONNOLLY, Associate Editor

DEMOLITION CREWS are rapidly razing another of New York's landmarks—the world-famous Ritz-Carlton Hotel and Carlton House—to make way for a 25-story air-conditioned office building. Ornate stonework, shimmering chandeliers, ornamental fixtures, carpeting, mirrors, mosaic tiling, brocade wall coverings—everything has fallen or will fall before the onslaught of wrecking crews, armed

(Continued on page 91)





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*Tackle Blocks*



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- ③ TACKLE BLOCKS



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● Only Upson-Walton wire rope snatch blocks have a drop-forged, one-piece strap. Instead of the strap being "wrapped" around the crosshead link, it is forged *double thick* with solid eye connections at each end to which the links attach with pins (see arrows). Thus, there is no "wrap" to straighten out under load.

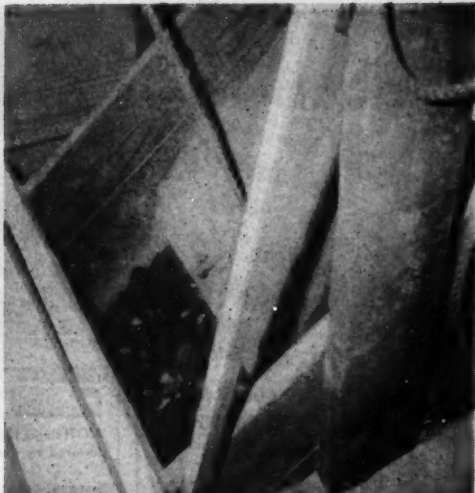
Crosshead, eyes, links and hoist hook also are drop forgings for *strength*. This permits high safe working loads, with a liberal factor of safety.

It pays to specify Upson-Walton tackle blocks—wire rope and fittings too. Your Upson-Walton distributor has full information.

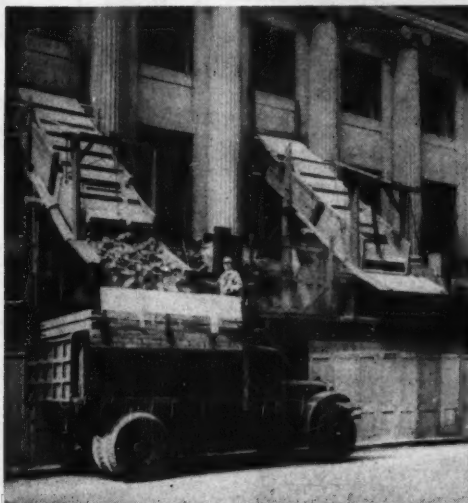
**THE UPSON-WALTON COMPANY**  
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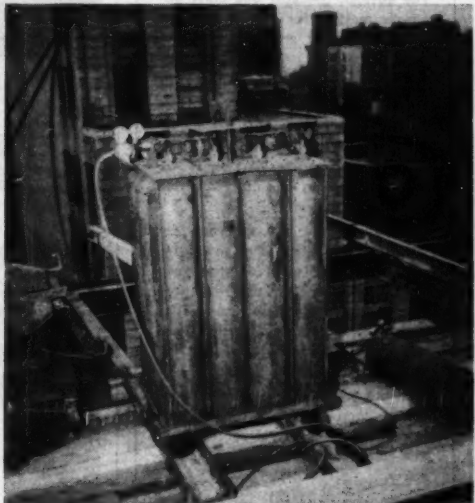
AFTER THOROUGH WETTING DOWN, rubble is carried in wheelbarrows and sent hurtling down through two double elevator shafts previously lined with planking. Shafts' bottom is at fifth floor where



rubbish enters two steeply pitched plank troughs. Drop gates hold back material where chutes pass through third floor level; workmen paying out yard or two at a time into second floor chutes.



EMERGING THROUGH second floor window openings, chutes clear roof of sidewalk bridging set-up for safety of mid-Manhattan pedestrians. Note bank of oversized, non-usable doors strung along gutter



line. On upper planked deck, meanwhile, derrick crews burn and lower steel. Dozen oxygen bottles (right) are clamped in hoisting frame; feed through one regulator along with one acetylene tank.

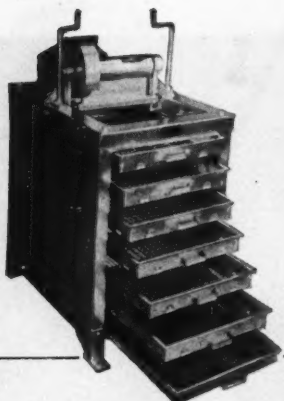
with screw drivers, wrecking bars, sledgehammers and oxyacetylene torches.

Built in 1910, the lavish suites and dining rooms were designed for the entertainment and comfort of the *haut monde*, but extra high ceilings, extra large rooms and a huge maintenance staff make it uneconomically operative today. So, off it goes to limbo to be replaced by a modern structure.

On January 10, workmen of D.E.H. Demolition Co. Inc., Bronx, N. Y., swarmed up through the Carlton House, removing cabinets, carpets, hardware, exposed plumbing, lavatory equipment, mantels, fireplaces, electrical fixtures, and all other salvageable items. Then, starting at the roof and working their way down, they removed all doors, windows, mirrors—everything taking a final trip down in

the elevators for sorting and tagging in the main lobby and finally on to purchasers or company storage warehouses.

Meanwhile another crew erected sidewalk bridging to protect pedestrians on heavily traveled Madison Avenue and 47th St. using a soldier course of oversized paneled doors along curb lines. Next, catch-all scaffolds were erected at 6th, 10th and 14th floor levels and outriggers



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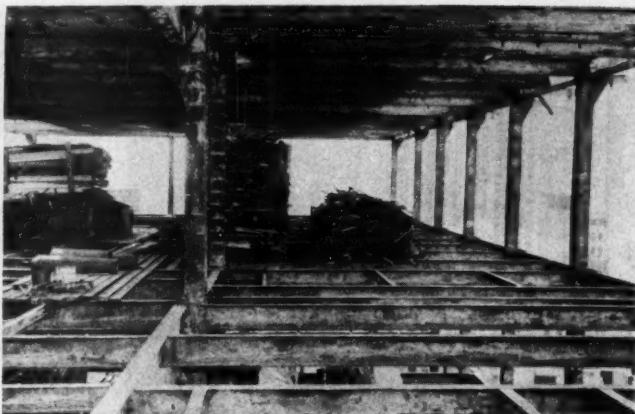
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COMPANY .....

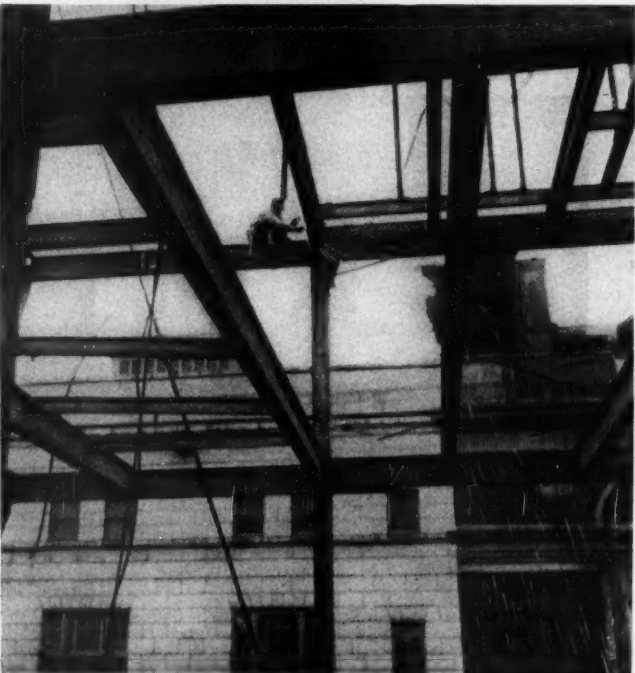
CITY ..... ZONE .....

STATE .....  
C.M.&E.

## **RITZ-CARLTON DEMOLITION . . . Continued**



**NOTHING IS LEFT BEHIND** but piles of metal on jags which span steel girders and will be lowered by derrick. These include pipe, window frames, conduit, reinforcing, etc.



**SHOWER OF SPARKS** (lower right) descends through steelwork as iron workers burn through all but 1 or 2 in. on intermediate stringers. No heavy girders or columns are burned, however, until derrick choker is firmly fastened to accept load transfer.

clamped in place to roof girders, 19 floors above the street. Catch-alls were decked with 2x10 planks which were spiked to 4x6 stringers projecting through window openings. These, in turn, were held by vertical kickers braced to exposed fireproofing on steelwork of floor

above. Typical bricklayers' scaffolding, complete with planking and ratchet jacks, was hung from roof outriggers.

With all removables out, elevator wells were stripped of machinery and two pair of empty wells were  
(Continued on page 94)



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**CRAFTSMANSHIP, PRECISION, KNOW-HOW**—typical of American Bosch manufacture—are carried over in full to our ever-growing service organization.

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**ARIZONA**—Mesa, Perkins Diesel Service, 747 South Mesa Blvd.; Phoenix, Charlie C. Jones Battery & Electric Co., 318-322 W. Jefferson St.

**ARKANSAS**—North Little Rock, Womack Brothers and Taylor, 522 East Washington.

**CALIFORNIA**—Fresno, Winther Bros., 612 Divisadero St.; Los Angeles, Diesel Injection Equipment Co., 4847 Anaheim Telegraph Rd.; Los Angeles 21, Magneto Sales & Service Co., Inc., 751 Towne Ave.; Sacramento 6, Langner & Rifkin, 1116-22 15th St.; Salinas, Hoag Diesel Electric, 37 Abbott St.; San Diego, Magneto Sales & Service Co., 1254 Kettner Blvd.; San Francisco 3, Furrer & Uster, 225 Seventh St.; Wilmington, Diesel Control Corp., 218 North Marine Ave.

**COLORADO**—Denver 3, Control Supply Company, 1171 Lincoln St.

**DISTRICT OF COLUMBIA**—Washington, Diesel & Ignition Service, Inc., 925 Girard St., N.E.

**FLORIDA**—Jacksonville, Patten Sales Co., Inc., 1021 Hogan St.; Jacksonville, Spencer Electric, Inc., 40 West Beaver Street; Miami 36, Florida Diesel Service Co., 1930 N. Miami Ave.; Tampa, Stuart Diesel Service, 3101 4th Ave.

**GEORGIA**—Atlanta 3, Auto Electric & Magneto Co., 477 Spring St., N.W.

**IDAHO**—Boise, Midwest Service & Supply Co., 1208 Grove St.; Lewiston, Osterman Diesel & Electric Co., 1610 Main St.

**ILLINOIS**—Chicago 16, Illinois Auto Electric Co., 2011-37 S. Indiana Ave.; Rock Island, Lohse Automotive Service, 430 17th Street.

**INDIANA**—Indianapolis 4, Gulling Auto Electric, Inc., 450 N. Capitol Ave.

**IOWA**—Cedar Rapids, Edwards Carburetor & Electric, Inc., 209 Seventh St.; Southfield, Des Moines, Electrical Service & Sales Co., 1313 Walnut St.

**KANSAS**—Wichita 2, E. S. Cowie Electric Co., 230 S. Topeka Ave.

**KENTUCKY**—Louisville, Schoof Auto Electric Co., Broadway at Jackson.

**LOUISIANA**—New Orleans, Gerhardt's Fuel Injection Service, 734 Girod Street; New Orleans 13, John M. Walton, Inc., 1050 Carondelet St.; Shreveport, Vaughn Tractor & Auto Parts Co., 224 Airport Drive.

**MAINE**—Portland 5, Portland Tractor Co., Inc., 803 Forest Ave.

**MARYLAND**—Baltimore 1, Parks and Hall Automotive Corp., 1033 Cathedral St.; Baltimore, Stephen Seib & Co., 876 Park Ave.

**MASSACHUSETTS**—Boston 15, W. J. Connell Company, 121 Brookline Ave.; Boston 10, Wharf Machine & Electric Co., Inc., Fish Pier Road; Fairhaven, Hathaway Machinery Co., Inc., Hathaway-Brosley Wharf.

**MICHIGAN**—Detroit, Knorr-Maynard, Inc., 5743 N. Woodward Ave.

**MINNESOTA**—Minneapolis, George Nushaum Diesel Service Co., 3157 15th Ave., South; Minneapolis 2, Reinhard Bros. Co., Inc., 11 South 9th St.

**MISSISSIPPI**—Jackson, Womack Brothers, 1305 South Gallatin Street.

**MISSOURI**—Kansas City 8, Electrical & Magneto Service Co., 2538 Grand Ave. St. Louis 23, Diesel Fuel Injection Service Co., 9331 So. Broadway; St. Louis 3, Electric Parts and Service Co., 2900 Washington Blvd.

**MONTANA**—Billings, Original Equipment, Inc., 423 North Broadway.

**NEBRASKA**—Omaha 2, Carl A. Anderson, Inc., 16th and Jones.

**NEW JERSEY**—Newark 2, Tire Trading Company, Inc., 239 Halsey St.

**NEW YORK**—Brooklyn 9, E. A. Wildermuth, Inc., 1102 Atlantic Ave.; Bellerose, Balivier Magneto Co., 40 Wellsville St.; Buffalo 8, Helrich Electric Service, 1032 Elliott St.; New York 19, American Bosch Corp., New York Service Sales Division, 401 W. 51st St.; Syracuse 4, F. A. Crossman, Inc., 943 West Genesee St.; Troy, Ehrlich Electric Service, Inc., 200 Fourth St.; Utica, Silefrator Electric Co., Inc., 320-322 Lafayette St.

**NORTH CAROLINA**—Charlotte, Carolina Rim & Wheel Co., 301 East 8th St.

**NORTH DAKOTA**—Fargo, Northwestern Diesel Equipment Service, 2800 Front St.

**OHIO**—Cincinnati, Tri-State Distributing Corp., Broadway at Eighth; Cleveland 14, The Cleveland Ignition Co., 1301 Superior Ave.; Columbus 15, Columbus Ignition Co., 211 Neilson Ave.; Lisbon, Diesel Service Co., 234 East Washington St.

**OKLAHOMA**—Fairview, Keck Bros. Diesel Service, 322 South Main; Oklahoma City 2, American Electric-Ignition Co., 124 N. W. 8th St.; Tulsa, Magneto Ignition Company, 701 West 5th St.

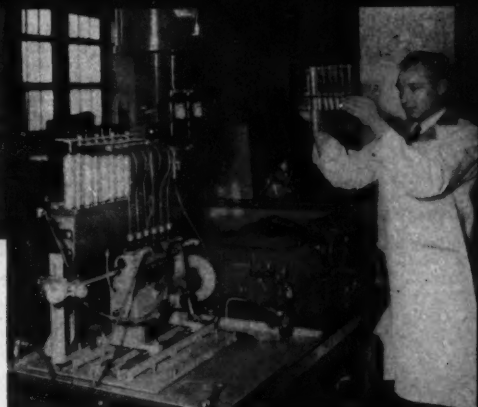
**OREGON**—Klamath Falls, Diesel & Electric Service, 1950 So. Sixth St.; Pendleton, Ed Magneto & Diesel Co., S. W. 18th and Court St.; Portland 14, Automotive Products, Inc., 1700 Southeast Grand Ave.; Roseburg, Diesel Products, 303 East Second Ave., South.

**PENNSYLVANIA**—Hazleton, Penn Diesel Service Co., 27th & N. Church Streets; Philadelphia, Sullivan Brothers, 1718 Fairmount Ave.; Pittsburgh 13, Automotive Ignition Co., Inc., 6358-64 Pang Ave.

**SOUTH CAROLINA**—Charleston, Diesel Fuel Injection Service Co., 2 Exchange St.

**TENNESSEE**—Knoxville, Diesel-Magneto Service Co., 1209 Island Home Ave.; Memphis 4, Automotive Elec. Service Co., 982 Linden Ave.

**TEXAS**—Amarillo, Rodcliff Bros. Electric Co., 501 East Third Street; Dallas 1, Beard & Stone Electric Co., Inc., 2101 Bryan St.; El Paso, Oakes Battery & Electric Co., 423 Texas St.; Houston 1, Beard & Stone Electric Co., Inc., 805 Palk Ave., P. O. Box 1717; Odessa, Electric Service & Supply, P. O. Box 1471; San Antonio, S. X. Callahan, 425 N. Flores



St. San Antonio, Womack Bros., 1018 S. Press St.

**UTAH**—Salt Lake City 2, Koepsel & Love, 47 East 7th South St.

**VIRGINIA**—Norfolk, Diesel Injection Sales and Service, 808 Union St.; Richmond, C. W. Woodward Electric Co., Inc., 709 W. Broad St.

**WASHINGTON**—Seattle, Van's Diesel Electric Co., P. O. Box 560; Seattle 1, Seattle Injector Co., 2708 Second Ave.; Seattle, Sunset Electric Co., 300 Westlake North, P. O. Box 3148; Spokane, Sunset Electric Co., North 703 Division St.; Walla Walla, Industrial Products Co., 610 N. Ninth St.

**WISCONSIN**—Milwaukee 2, Wisconsin Magneto Company, 918 N. Broadway.

**CANADA**—Calgary, Hutton's, 131-11th Ave., W.; Edmonton, Smith Battery & Auto Electric, 10125-105th St.; Fredericton, N. B., Stearns Bros., 493 Northumberland St.; Montreal, International Electric Co., Ltd., 1037 Bleury St.; Quebec, Quebec Gas & Diesel Engines, Ltd., 15 South-au-Montiel St.; Regina, Electric Motor Service, 1714 Broad St.; St. John's, Newfoundland, A. H. Murray & Co., Ltd., Saskatoon, N. Lambert Electric, 114-116 Avenue A; Toronto, A. Cross & Co., Ltd., 45 Elm St.; Toronto, Auto Electric Service Co., Ltd., 1009 Bay St.; Vancouver, Jeffroe & Jeffroe, Ltd., 773 Homer St.; Vancouver, Macfarlane & Co., 1955 Columbia St.; Vancouver, Vivian Engine Works, Ltd., 1660 Station St.; Winnipeg, Brown & Murray, Ltd., 237-241 Fort St.

**ALASKA**—Anchorage, Automotive Diesel Electric Supply & Overhaul, Box 1160; Juneau, Parsons Electric Company, Second and Seaward Sts., P. O. Box 1749.

**HAWAIIAN ISLANDS**—Honolulu, Honolulu Iron Works Co., P. O. Box 3140; Honolulu, Tokai Machine & Marine Works, 810 Hokena St.

**PUERTO RICO**—San Juan, General Farm Equipment Co., Tras-Miramor, Santurce, P. O. Box 3588.

**MEXICO**—Ciudad Obregon, Sonora, Servicio Auto Electrico, S. A., Calle Sinaloa No. 400; Guadalajara, Jalisco, Electro Diesel de Occidente, Apurto No. 297; Mexico, D. F., Automotriz Servicio S. A., Pray Servando Teresa de Mier 242; Monterrey, Nueva Leon, Electro Diesel, S. A., Ego Avenida Morelos y Zuazua; Torreon, Coahuila, Servicio Diesel Electrico, S. de R. L.; Guadalupe Victoria No. 216—Sur; CUBA—Havana, E. Boyer y Cia., San Jose No. 155, (Service Station at Joaquin Alamey Lopez, Avenida Menocal (Infante) 1106); Havana, Campana Riera, Toro and Van Twilsten, S. A., Habana No. 86.

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**SUPERIOR PERFORMANCE** — thru improved design; higher operating speeds; lighter weight, heavy duty flexible shafting; shorter, more efficient vibrator heads.

**MORE UTILITY** — new STOW design permits tool shafts to be quickly, easily attached to the engine shaft for grinding, buffing, drilling. Complete accessories available.

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Catalogs all STOW vibrator models and accessories. Gives performance data. Write today for your FREE copy

## STOW

MANUFACTURING CO.

31 SHEAR ST. BINGHAMTON N. Y.

(Continued from page 92)

lined with heavy planking from the roof down to the fifth floor, where extra-heavy slanted timber decks were installed. Troughs of planking were sloped down from these at a steep angle, with ends projecting through second-floor windows on the north side of the building for direct delivery of rubbish to dump trucks. Hold-back drop gates were installed where each chute passed through the third-floor level. These retain the backed-up pile of rubble and, here, workmen pay out a few yards at a time to another set of drop gates at the chute ends.

In sharp contrast to the uniformed attendants, opera-hatted signori and lavishly-gowned ladies who often frequented the main lobby, most of that space is now taken up by two roaring, pumping and hissing Chicago-Pneumatic compressors, one 600 and one 315 cfm. These boost 1,000 psi of air into an accumulator which supplies a 4-in. riser running up a stairwell to the roof, ending in a manifold with sixteen outlets for air hammers.

### Rubble Dumped Into Wells

Partition crews (working three floors below deck crews) knock out all interior partitions, walls and arches; burn off all piping and other metals thus exposed; wet the rubble continuously to keep dust at a minimum and dump wheelbarrow loads into the plank-lined elevator wells. Deck crews above remove wood decking, and knock out concrete floors and beam fireproofing with 12 to 16 air hammers. Shovel and wheelbarrow crews, one floor below, gather up the broken concrete (also well wet down) and send it hurtling on its way down the shafts. Crews on the top outer scaffolds are working on the same level with deck crews. They chip out limestone facing, common backup brick and plaster, all adding their large bit to the volume of rubbish for removal.

Burners make short work of old-fashioned flat spiral reinforcing which is stacked up, along with pipe risers, metal window and door frames, stair railings and all other miscellaneous metals, in cribs spanning exposed steel girders. Panel doors are spiked into window openings on levels where deck crews are at work to prevent rubble from falling to catch-alls outside the building. When steelwork had been exposed on the three topmost stories, a small stiffleg derrick was set up on the roof steel and two dou-



OVER SIDE GOES ASSORTMENT of channels, I-beams and pipe in steel cradle, down past outside wrecking crews and three catch-alls to trucks in busy 47th St below. Pictures show work on Carlton House. Hotel proper was made available last May 1.

ble-drum hoists bulled into place at street level. Holes were chopped through concrete floors; then wire ropes were threaded up through and reeved into the derrick which hoisted up the first of two guy derricks. No. 1 derrick quickly set up No. 2, and an ironworker crew of foreman, pusher and ten journeymen tackled the job of salvaging steel.

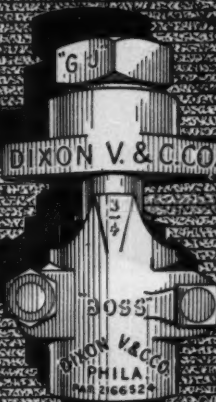
Procedures are reversed, with all heavy loads going down instead of up, derricks jumping down periodically, and hoist drums taking on cable with each new setup instead of paying it out. As steel is burned, stacked and lowered, the manifold is disconnected atop its air riser, a 12-ft length removed and the manifold replaced. Meanwhile an electric conduit runs up the stairwell alongside the air riser, providing stairway lighting. This is shortened also as each floor disappears. Current is supplied through a special meter for the contractor, since all

house current was disconnected after elevator removal. Occasionally the derrick crew halts steel removal and lowers the jags full of scrap metals. Wood underflooring is similarly stored and lowered but is not reusable.

Each day 30 to 35 truckloads of rubble are removed, carrying 15 yd each. When workmen reach the fourth-floor level, care will be exercised to save the enormous 30-ft fluted limestone columns and face blocks. Just a few days ago, on May 1st, the Ritz Carlton Hotel proper was vacated and free rein given the demolishers there, too, so work is now proceeding on both sections.

D.E.H. Demolition Co. Inc. is subcontracted for wrecking to Uris Brothers, who will later erect the new building. Jerry and Harry Drachman are respectively president and secretary-treasurer of the D.E.H. Co. and Harold and Percy Uris are the brother-partners who head the latter company.

## LEADERSHIP Through Service



**"G-J-BOSS"**

### Air Hammer Coupling

Years of acceptance by the construction, mining and quarry industries have established this washerless coupling in the pre-eminent position it rightfully deserves. The acme of perfection in materials, workmanship and finish. Cadmium plated—rustproof.

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# Faster hard-facing... smoother jobs



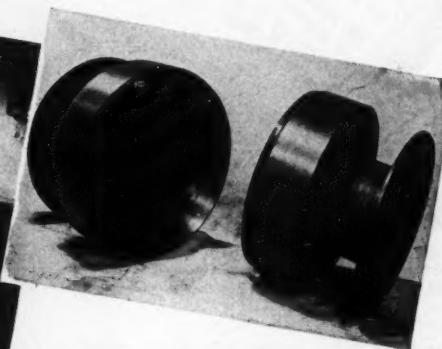
*Tractor Rollers automatically hard-faced and ready for installation, untouched by hand operations. Note smooth, even beads.*

because they're welded  
**AUTOMATICALLY!**

The new STODY Wires are adapted to all processes where suitable flat or cylindrical work is hard-faced.



*No left in deposits, no finish grinding, this hard-faced IDLER WHEEL is ready for duty direct from the welding machine.*



*These clutch and brake drum faces were automatically hard-faced internally and externally with Stody 107. They were then machined to a smooth surface for more wear resistance than new.*

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Tedious? Not at all... you can get most parts hard-faced automatically in your own

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# We Must Pay As We Go

***We must do our utmost to pay as we go for our present defense program.***

On that proposition those who speak with authority are remarkably well agreed. This editorial—the second in a series on our mobilization for freedom—sets forth in simple terms why there is this agreement.

Next year—the fiscal year beginning next July 1—the federal government's budget calls for the expenditure of \$10 billion more than is scheduled to be collected in taxes. The deficit is due to the increase in defense expenditures.

A part of this deficit can be eliminated by cutting non-essential expenditures and increasing efficiency in the defense program. There is wide agreement on this. It is the duty of the President and Congress to see that it is saved.

*How the remaining deficit anticipated in the federal budget—\$5 billion to \$10 billion—is handled is crucial.* The government can meet it by raising taxes—by paying as we go. Or it can borrow, issuing more government bonds.

## **Borrow Again?**

We relied heavily on borrowing in both World War I and World War II. In World War I only about one-third of the expenditures of the federal government were met by taxation. In World War II about 45 percent were met in this way. The rest we borrowed. Some people ask, why can't we rely heavily on borrowing again? Why is it crucially important to avoid adding \$5 billion to \$10 billion to a federal debt that is already \$257 billion?

Part of the answer is found in the contrast be-

tween this defense program and our all-out effort of World War II. Another part—and one that is all-important in combatting inflation—results from the rapid decline in the purchasing power of the American dollar in recent years.

We went "all out" in World War II. We put almost half of everything we produced into our military effort. Taxes high enough to pay the financial costs as incurred would have meant huge tax increases. It was feared that such increases would kill financial incentives to get "all out" production. Since we expected the war to be short, borrowing seemed a safe expedient. Price control and rationing, with wartime patriotism to give them effective support, were relied upon to keep in check the inflationary pressure created by borrowing rather than taxing.

Our present defense program is scheduled to take a much smaller share of our production, but to take it over a much longer period. At its peak, the program as now planned will take only about 20 percent of our total national production. But, to use General Bradley's phrase, "the conditions under which we labor may persist for ten, fifteen or twenty years."

## **What About Controls?**

For a period of any such duration it would be foolhardy to expect that the sort of controls we had for the few years of World War II could hold in check the inflationary pressure created by not paying as we go. It would be as foolhardy as it would be for a family to plan on borrowing to pay the expenses of a member discovered to be afflicted by a chronic ailment which might last a long lifetime.

Obviously, the only safe thing to do in such a case would be to adjust the family budget so that the expenses of the illness would be paid currently.

*Our heavy reliance on borrowing in World War II had consequences which block a successful repeat performance.*

If the borrowing had been done by persuading individuals to transfer their savings into government bonds, relatively little inflationary pressure would have been created. What the government would have spent with the proceeds of such bond sales would have been subtracted from the money individual consumers could spend.

But much of the borrowing was done from banks. That course expanded the amount of money available to the government without any offsetting subtraction of money from the hands of individuals. Thus, when direct price controls were removed after the war, this bottled-up purchasing power contributed to a price inflation which has cut purchasing power of the American dollar about in half — and decidedly changed the attitudes of the American people toward that dollar.

During World War II, Americans in general believed that:

The war would not last long.

The dollar would hold its value, and even gain value after the war.

Many wonderful new products would be available in the postwar period.

Today the American people have:

Seen the value of their dollars melt away fast.

Been assured that, at best, we may have a 10-15-20-year pull ahead.

Been warned not to expect a postwar paradise anytime soon.

One result of these changed attitudes is a notable lack of enthusiasm for government bonds on the part of individual investors. This is indicated by the fact that since Korea redemptions of E bonds have exceeded sales by about \$600 million. Another result is a continuing rush to convert dollars into physical goods and equipment or claims on them. This trend weighs against financing the prospective federal deficit by borrowing from individuals.

*Borrowing from banks to meet the deficit would again add fuel to inflation.*

The prospective deficit is due to federal expen-

ditures for military goods. Even if they are not blown up or shipped abroad, these goods will not be available to civilians. But the money paid to those who produce military goods will still be available to bid up the prices of civilian goods. Thus, at a time when people show relatively little disposition to save dollars, a menacing inflationary pressure — an inflationary gap, the economists call it — will be created.

If our fight against inflation is to be successful this gap must be closed by taxes. We need to do other things, too, for inflation has many different causes. Credit expansion must be effectively controlled. Production of civilian goods must be increased as much as possible by eliminating waste and inefficiency. But a pay-as-we-go tax program is basic to a successful attack on inflation. And inflation — unless it is checked — could wreck our defense effort.

*We cannot pay as we go merely by soaking harder the corporations and those in the upper income brackets.*

As the President's Council of Economic Advisers has reported, "by far the largest part of the additional revenue must come from the middle and lower tax brackets. These are the brackets in which the great bulk of the income is located."

### **Taxes Can Attack Inflation**

By spreading tax increases broadly, taking small amounts from many people, inflationary pressure would be effectively reduced. It is the expenditures of the great mass of people, rather than the small numbers in the upper income tax brackets, that create most of the pressure. Moreover, it is possible to increase taxes broadly without killing the economic incentives to produce. Maintaining these incentives is essential to the success of the defense effort.

Our elected representatives cannot be expected to be enthusiastic about a pay-as-we-go tax program. It involves increasing the taxes of the great body of their constituents, an operation completely lacking in political glamour. However, such a program also involves the integrity of the American dollar. And that is absolutely essential to the success of the defense program. We shall be very foolish if we do not let our leaders know that we want them to do everything possible to pay as we go.

***McGraw-Hill Publishing Company, Inc.***

Sgt. Robert Christman levels a field at the eastern end of the Davison airstrip, Ft. Belvoir, Va., with a "Cat" D7 Tractor. In the background are four "Cat" No. 12 Motor Graders completing runway.

## THE MILITARY GETS FIRST CALL

THESE "Caterpillar" earthmoving machines, working on the runway of the Davison airstrip at Ft. Belvoir, Va., show at a glance where a lot of "Cat" equipment is going these days. And that's how it's got to be.

Defense Rated Orders get first call as America's military establishment prepares for what may come. The urgent build-up of our power has meant drafting machines as well as men. An ever-increasing flow of "Caterpillar" equipment and parts is going to the support of America's fighting men and to defense projects.

This means that there already exists a scarcity of "Cat" equipment and engines for civilian use. So it is to your advantage to make the machines you

now have last. You can keep them on the job longer by doing these things:

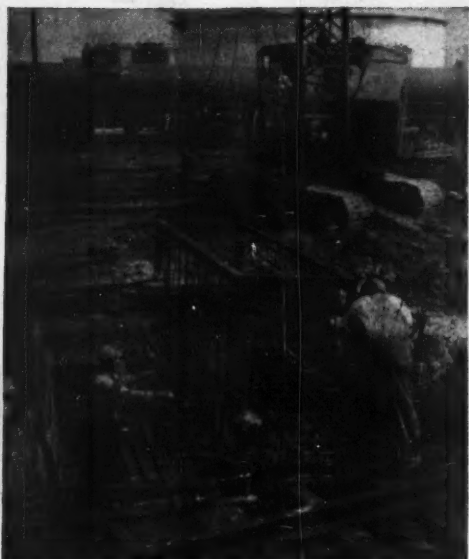
- 1 Follow sound and recommended operation and maintenance procedures to the letter. Read and reread your Operator's Instruction Book.
- 2 Make full use of your "Caterpillar" dealer's facilities for servicing and rebuilding machine parts.
- 3 Anticipate future parts needs, then contact your dealer and let him help. But don't buy or order parts you don't actually need.

Caterpillar Tractor Co. will do everything possible to maintain every "Caterpillar" machine in the field, to provide new machines as fast as possible, and to allocate them as fairly as possible.

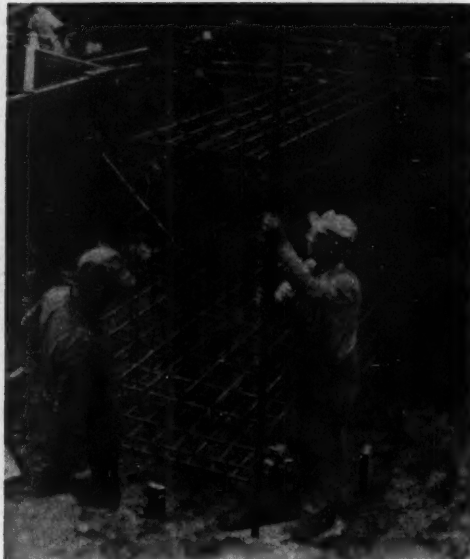
CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

# CATERPILLAR

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT



WELDED CAGE of reinforcing is placed for one of 46 craneway footings in Indiana scrap yard. Prefab unit weighs 1,200 lb.



PLANK SILLS on which prefab form will rest are set to grade. Note stakes driven to guide form into exact position in pit.

## Prefabrication of Reinforcing and Forms

WHEN PRELIMINARY ESTIMATES for pouring 46 identical craneway foundation piers indicated completion of only four units per week for an all-site-work procedure, contractors H. B. Olney, Inc. switched to a prefab scheme. With it, they cut job time nearly in half. They had all the steel re-

inforcing for each pier shop-welded into a cage, they formed-up an entire footing with a single pre-built assembly, and they completed an average of  $7\frac{1}{2}$  piers weekly.

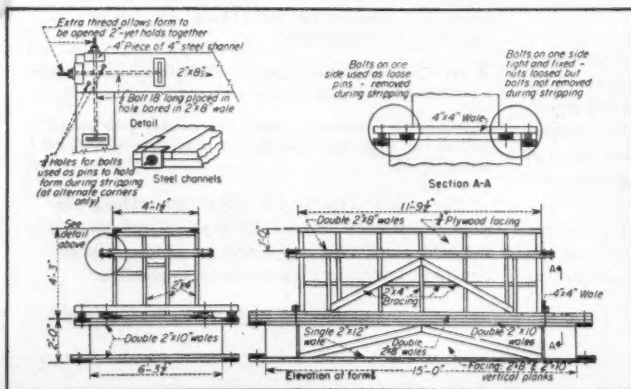
The 46 footings are to support the superstructure for a structural steel overhead crane in the East Chicago (Ind.) scrap metal yard

of the Northern Indiana Dock Co. They consist of a 6x15-ft pad 2 ft high on which is a 4x12-ft pedestal 4 ft high, all poured monolithically.

Because ground was wet, a well-point system was installed. The pump was located at the center of the line of footings and discharged through an 8-in. header into a canal 1,300 ft away. A 4-in. suction header from the pump ran down the craneway, with 4-in. branches between adjacent footing pits. Four  $1\frac{1}{2}$ -in. points 12 ft long were put down from each branch. Four branches were pumped at all times, being leapfrogged ahead with the progress of the work. Pump and discharge line remained fixed throughout the job.

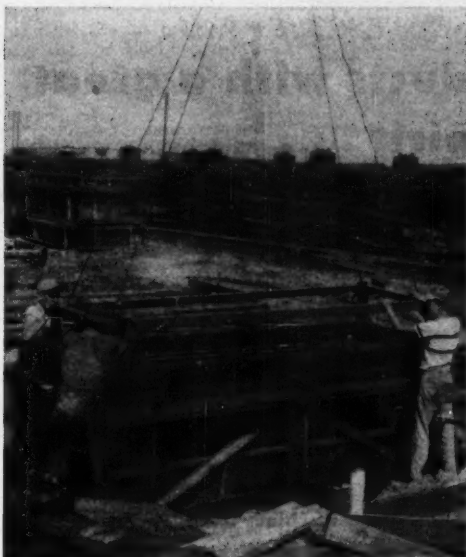
Because of a layer of poor ground, the footing pits were excavated an additional 30 in. below final bottom grade. After this extra space was backfilled with clean sand, the wellpoints were shut off over night, then pumped down the next day to compact the sand and leave a firm, level base for the footing pour.

The one-piece reinforcing steel cages for each of the 46 footings were completely prefabricated in a local iron shop. All-welded, the



PREFAB FORMS are detailed in sketch. Bolt and channel clamping devices, similar to those holding upper-form wales, also are used to hold corners of top wales of base form.





PIER ARMOR, also prefabricated, is slipped into form assembly. At left rear, other identical prefab forms wait to be placed.



CONCRETE is chuted to form in minimum  $1\frac{1}{2}$ -hr pour. Stewart Stein, of Sobel & Stein, architects-engineers, checks this one.

## Halves Time for Multiple Footing Pours

1,200-lb units were trucked to the job site and unloaded by crane, which placed them on four blocks set to grade in the excavated footing pits.

A prefabricated, one-piece wood form assembly was then lowered over the reinforcing cage. It was guided to exact location by stakes previously driven to a templet, and rested on plank sills placed at correct elevation. String lines were pulled through for anchor bolt setting and as an additional check on form location. A prefabricated angle iron guard insert to armor the edges of the footing was next lowered into the form, set flush with the top, and checked by instrument for elevation. Ready-mix concrete with a 4- to 5-in. slump was then placed, with the 14-yd pour completed in not less than  $1\frac{1}{2}$  hr to prevent the form from floating.

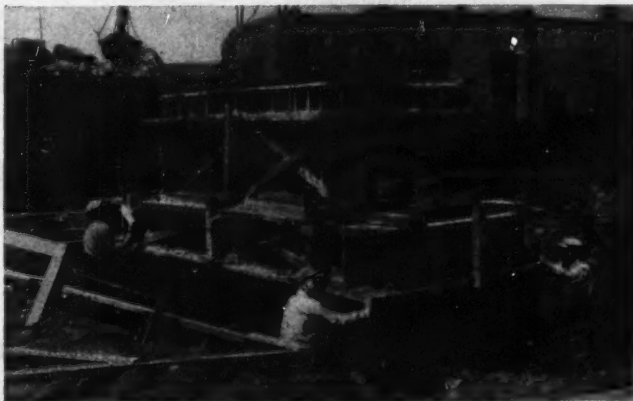
Four identical forms of simple design (sketch) served for all 46 piers. One feature of prime importance: Extended bolts at the corners of the upper pier section of the form to allow the strippers ample 2-in. clearance on all sides to break the suction of the concrete to the form face. Pins were used in the lower base section, and were pulled

and reset in a hole provided to hold the open position and retain the sides as a unit. The loosened form assembly was easily lifted from the poured pier by crane, and made ready for re-use on the next within 1 hr.

Job-site working time on the 46 footings covered a period of 33

working days of  $8\frac{1}{2}$  to 11 hr. Of this time, two full days were lost on account of rain and one day because of a sub-soil condition that prevented pouring. As many as three piers were completed daily, with over-all job average about half that. Site conditions prevented a more rapid schedule. One fac-

(Continued on page 103)



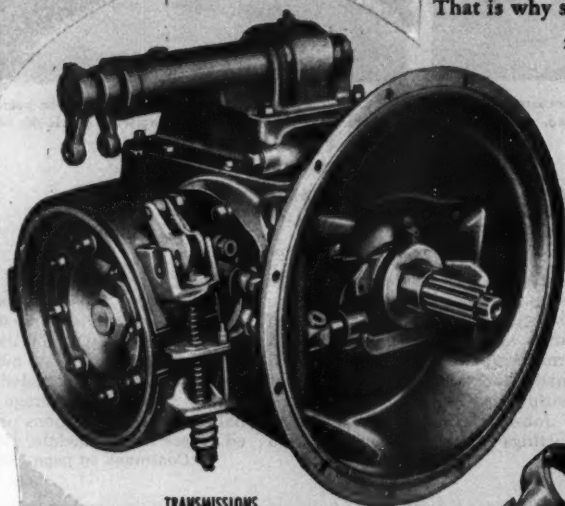
FORM ASSEMBLY is handled as a unit by crane. This one is being set for its eighth pour, and only four such prefabricated forms are needed for total of 46 foundation piers.

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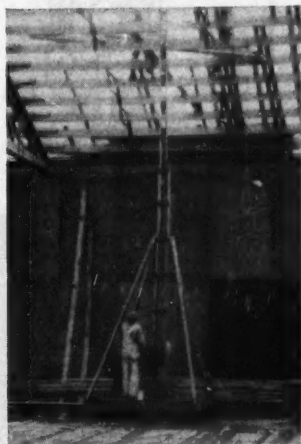
OTHER PLANTS—BATTLE CREEK, JACKSON, MICHIGAN

(Continued from page 101)

tor was the sub-soil preparation necessary before steel or forms could be placed; another was lack of working or storage space due to the owner's operations alongside, which continued uninterrupted throughout the job.

Walter H. Sobel & J. Stewart Stein, Chicago, were architects and engineers on the craneway project. Their job superintendent, Bruce H. Gregg, took the accompanying photographs. John Emig, of Chicago, was consulting engineer. General contractor was H. B. Olney Inc., East Chicago, Ind., for whom William Christian was superintendent and Paul Hornick carpenter foreman. These two, in collaboration with the architects, conceived and built the prefab forms in the contractor's yard. Howard Kane, of East Chicago's Calumet Iron & Supply Co., developed the details, templates and jigs for producing the prefab reinforcing cages and angle guards.

### Drill Powers Small Ginpole



THE PROBLEM of hoisting timbers up through a partially completed arch roof on an Oakland, Calif. job was quickly solved with an adjustable, telescopic wooden ginpole on a mobile platform. Lifting is done by  $\frac{3}{4}$ -in. electric drill, with chuck replacing hand crank on altered spur-gear stub. Ratchet prevents back-slipping and hoisting is controlled by drill trigger switch. John Lovtang, who devised the rig, is foreman for Christenson & Lyons of Oakland.



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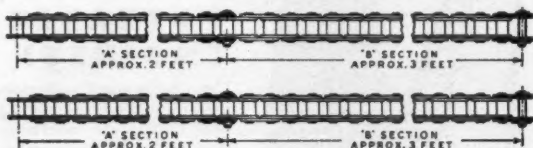
# THIS ROLLER CHAIN IS "made up"

## ... NOT "CUT UP"

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With "BA" you get any length of chain you want—when you want it. No fuss... no bother. Your shop can quickly and easily make up the chain to the exact length you require. Your distributors can just as quickly and easily make up replacement chain to required length. No chain is "cut," and possible damage to chain parts that might seriously weaken your strand is avoided. Here's how it's done.

Baldwin Rex "BA" Assembly Chain is shipped in boxes containing two 5-foot lengths with single pin connectors at approximately the two and five-foot marks. In addition, there are available a series of "BA" Short Units. (See below.)



To get the length you need, it's just a question of simple arithmetic:

For a 2-foot length, use section A.

Two B sections give you 6 feet.

For a 3-foot length, use section B.

7 feet is a combination of two A's and one B.

You get 4 feet by combining two A sections.

8 feet is two B's and an A.

And for less than two feet, 9 feet, or any odd length, just use a combination of the standard lengths plus the appropriate "BA" Short Units shown below.



Offset Link.



Two pitch unit (single pin connector links plus roller link).



Three pitch unit (two single connector links plus roller link).



Six pitch unit (with single pin connector at end).



Ten pitch unit (with single pin connector at end).

**HERE'S THE "BA" SECRET!** The secret of the Baldwin-Rex "BA" Assembly is the *Single Pin Connector*. A washer (1) is spun over the head of the connector pin (2). The milled flat (3) at the cottered end of the pin fits into a special hole in the side plate (4). This combination holds the pin firmly in place, yet it's easy to remove because it's a "sliding fit" through the entire link except for the milled flat end. When the single pin connector is removed, the riveted pin at the other end of the link (5) holds the side plates (6) firmly in place.

Remember, too, that "BA" makes assembly, disassembly or repair on the job much easier... much faster.

Ordering Note: If you prefer, you can order "BA" in quantity, pre-assembled in any lengths you desire.



**BALDWIN-REX**  
ROLLER CHAINS



Our Bulletin 50-6 has all the facts on "BA" Assembly. Write for it today or ask for it at your local Chain Belt Office. Chain Belt Company, 1664 W. Bruce Street, Milwaukee 4, Wis.



## Legal Decisions Concerning Construction

### "C. O. D."

THE SELLER had sold, and the contractor had bought, certain "goods, wares and merchandise," to be paid for "on delivery." The seller shipped the goods, and the contractor failed to take delivery, and the seller sued.

"You shipped the goods C. O. D. That was a breach of the contract and relieves me from my obligation to take the goods," the contractor contended.

"Why did you refuse the goods?" he was asked in court.

"Because I could not pay for them," the contractor admitted.

"That being so, the manner in which the goods were shipped is immaterial," the seller's attorney contended, and the North Carolina Supreme Court ruled in his favor in *White vs McMillan* reported in 114 N. C. 349.

### Did the Buyer Accept?

THE SO CALLED "Statute of Frauds" is a law that no business man may safely ignore.

For instance, if a contractor agrees to buy and a wholesaler agrees to sell cement over and above a certain value, then the sale is not binding, unless there is a part payment, an acceptance and receipt of the goods, or part thereof, by the buyer, or a signed memorandum of the sale, and the law is equally plain that the mere delivery of the goods by the wholesaler to a common carrier or at a place named by the buyer, is not, in itself, an acceptance and receipt of the goods sufficient to bind the buyer.

Suppose, then, that there is a mere verbal sale of goods, no part payment, and no acceptance and receipt by the contractor, but, after the sale has been made, the contractor agrees to sell the same goods to a customer. The contractor, however, fails to get a written contract with his customer, the new buyer "backs out," and then, when the goods arrive, the contractor refuses to accept them, on the ground that there was no

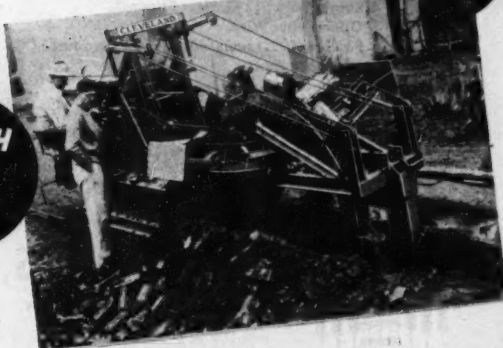
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**TOUGH  
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**Dependable** yardage because of the advanced engineering and extra-rugged construction that keep CLEVELANDS out of the repair shop, keep them on the job all year 'round under the toughest digging conditions. **Low-cost** yardage because of CLEVELANDS established low operating and maintenance costs, CLEVELANDS proved longer service life, and CLEVELANDS re-

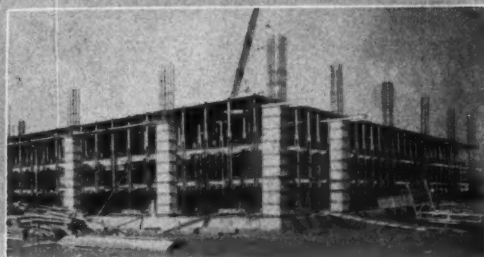
markable versatility that covers all your trenching requirements at a lower machine investment. **Schedule-beating** yardage because of CLEVELANDS engineered higher digging capacity, outstanding compact maneuverability and mobility that mean more yards of trench per working day. Call your distributor today or write direct for performance data and specifications.

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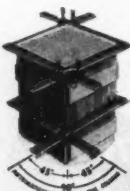
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binding contract between himself and the wholesaler.

"There was nothing in writing, and no part payment, so I'm not bound unless I accept and receive the goods," the contractor contends.

"That's true as a general proposition, but when you sold the goods to a third party, that was equivalent to an acceptance and receipt," the wholesaler retorts, and the law is in his favor on this point.

"But receipts and acceptance need not be contemporaneous with the alleged contract, if made in pursuance of it, nor need they be simultaneous. The former may precede or follow the latter. No act of the vendor alone can be effective to make delivery, without receipt and acceptance, to take the case out of the statute. If the vendee does any act to the goods, of wrong, if he be not their owner, and of right, if he is their owner, the doing of the act is evidence that he has accepted them," says the Maine Supreme Court in the case of Beedy vs Brayman W. W. Co. reported in A. C. 13 B 273.

### The Contractor and the Note

IF AN OWNER gives the contractor a note payable at the Z bank, and if the contractor presents the note at the bank and demands payment, it is a legal presentment.

Take this case, however, where the owner gives a note payable at his residence. The day the note falls due, the contractor places it on his desk, calls the owner's house on the telephone, and the owner answers the call.

"I have your note before me that falls due today," the contractor says, "and I'd like to know what you are going to do about it."

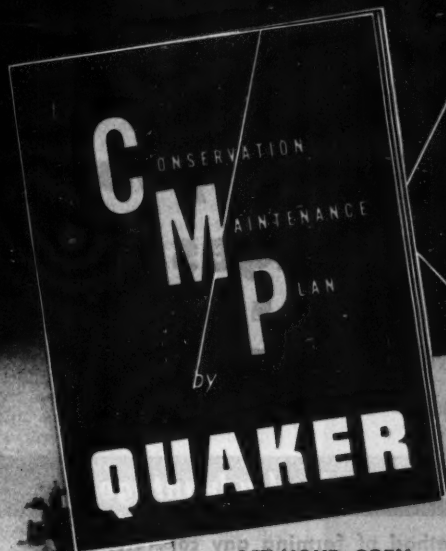
"Can't do anything today," the owner demurs.

"Well, I'm presenting the note and demanding payment right now, and you'll have to take the consequences," the contractor threatens. "Nothing doing," the owner tells him, and rings off.

Is this a legal presentment and demand of payment?

In a New York case involving this point, a note was payable at the maker's residence. The day the note fell due a bank about two miles away called the maker at his house on the telephone, told him that the bank held the note, and

(Continued on page 109)



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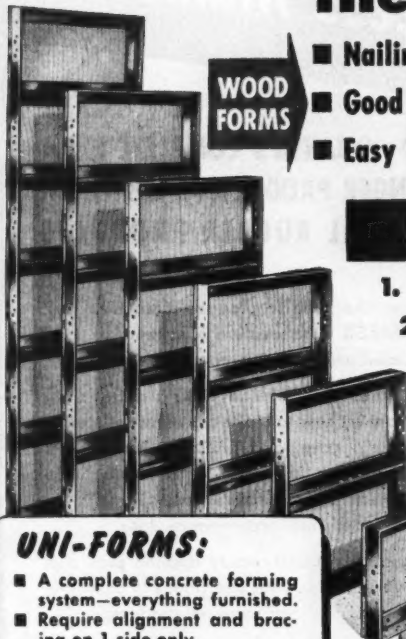
Whether it's the hose on the drill, the belt on the mixer, or the main power drive, Quaker's CMP will help you save time, material and money. Write today for the complete plan.

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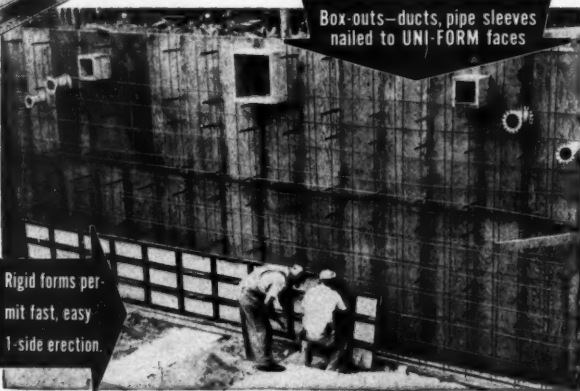
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(Continued from page 108)

demand payment. The note was not paid and the bank sued the endorser.

"You can't make me pay, for the note was never legally presented," the endorser argued, and the New York Court of Appeals in *Gilpin v. Savage* reported in A. C. 12 A. 861 decided in his favor.

### The Unsigned Check

THE CONTRACTOR was contemplating a trip to Chicago, and the evening before he left, he made out ten checks in favor of various creditors, and left them—unsigned—in his desk.

"Bring me those checks and I'll sign 'em before I go," he suggested the next morning.

"The one in favor of the Red Ball Garage isn't here," the clerk explained.

"That's easily remedied," the contractor declared, made out a new one, signed and mailed the whole bunch and hustled off to catch the train.

The next day the clerk left—with the missing check in his pocket, went to another state, forged the contractor's name to the check, opened a bank account there under the name of "Red Ball Garage," deposited the forged check which was duly presented to and paid by the bank on which it was drawn.

When the forged check was returned to the contractor, he promptly notified the bank and demanded that the bank credit it back to his account.

"We admit as a general rule that you'd be entitled to the credit if you notified us promptly of the forgery and if there was no negligence on your part," the bank argued, "but your failure to notify us that the unsigned check was missing deprives you of any right of action against us."

The Supreme Court of Pennsylvania, however, in *Pure Oil Pipe Line Co. vs. Columbia Nat. Bank*, reported in 119 Atl. 607 ruled in the contractor's favor.

"The single question is whether the maker on ascertaining that an unsigned check was missing, owed the bank the duty of reporting to it that fact. In our opinion no such duty existed. There is no contention that the employee had authority to sign the check. Upon doing so he was guilty of a criminal act entirely outside the line of his employment and duty," said the Court.

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### Check these outstanding features:

**Drive**...simple, positive; no cable or hydraulic drives; wears longer.

**Front Power Takeoff**...gives live bucket without master clutch being engaged; accurate control; easier to operate.

**Mounts on Main Frame of Tractor**

**Doesn't Interfere With Servicing of Tractor**

**Pre-Assembled**...entire drive unit is assembled and adjusted at factory—ready for you to put on.

**Doesn't Interfere With Drawbar**

**Automatic Control**...bucket stops automatically in dumping position.

**Brake Control**...hydraulic brake on rear spool shaft to control speed of bucket return.

**Uses No. 24 Cat P.C.U.**

**Good Visibility for Operator**

**Easily Converted to Dozer in 20 Minutes**

### SPECIFICATIONS

#### MODEL 6 C

Fits wide gauge, non-oscillating D6, without modification. Wide gauge, oscillating D6 can be modified to accommodate the 6C.

Standard Bucket Capacity in cubic yards (rated) ....1½

Bucket width .....6' Overall height.....18' 4"  
(bucket raised)

Overall width .....8' Overall length.....20' 8"  
(bucket lowered)

No. of bucket teeth.....6 Loading cycle  
(seconds) .....15

Dumping clearance..8' 1" Weight (approx.  
pounds) .....9,500

Overall height.....8' 2"  
(bucket lowered)

EXPORT DIVISION

P. O. Box 5043 Terminal Annex

Denver 17, Colorado

# JOHN AUSTIN, INC.

2 SANTA FE DRIVE  
DENVER, COLORADO

Printed in U.S.A.

# 1000 YARDS EVERY SHIFT



ON one of the northwest's toughest highway jobs—relocating 4.4 miles of U. S. 2 along the steep sidewalls of rocky Pine Canyon, near Wenatchee, Washington—Goodfellow Brothers, Inc., assigned the most difficult hauling to 3 GM Diesel-powered 16-ton Tournarockers.

"They are working out *very* satisfactorily," said James B. Goodfellow. Powered by 186 H.P. 6-cylinder "71" engines, the rear-dump Tournarockers hauled 9 to 11 bank yards each trip. On one 2800-foot, one-way haul, job records show that the three GM Diesel-powered units easily handled shovel production of 1000 yds. every 8-hour shift—helping to keep the job on schedule despite steep grades, rough haul roads and confined hauling conditions at altitudes of 2000 feet.

## Power at Every Downstroke

There are good reasons for this performance—rugged design and precision manufacture, two-cycle operation, a smooth flow of plenty of power, quick acceleration and the always-ready-to-go qualities of General Motors Diesels.

These engines are offered as standard or optional equipment in over 500 kinds of power machinery by 120 different manufacturers. They are backed by the experience gained in building more than 315,000 Series 71 units totaling over 48,000,000 horsepower.

For any equipment you buy or re-power, it will pay to specify GM Diesel power.

## DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES ... Up to 275 H.P. DETROIT 28, MICHIGAN MULTIPLE UNITS ... Up to 800 H.P.

GENERAL MOTORS

**DIESEL BRAVN WITHOUT THE BULK**



# CONSTRUCTION EQUIPMENT NEWS • • A Preview of

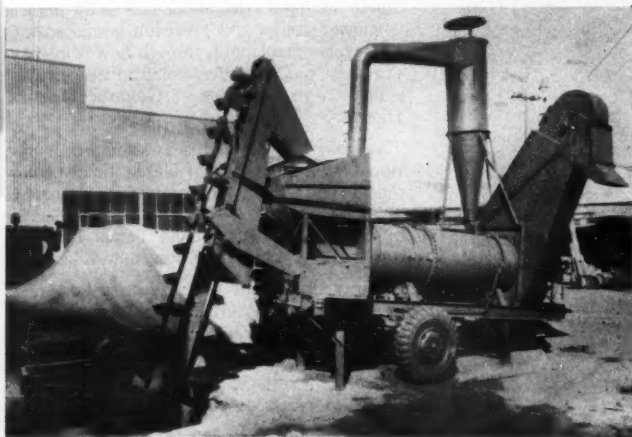
By MELVIN DEAN, Equipment Editor



## DRILL HAS UNLIMITED TOWER POSITIONS—

Model FM-3 wagon drill permits unlimited drilling positions of the tower or drill guide. Yoke can be lowered within the frame itself, placing the drill in the lowest desired position for toe-hole work. For higher holes, a hoisting mechanism consisting of a powerful worm-and-pinion gear, actuated by a ratchet handle, raises the drill.

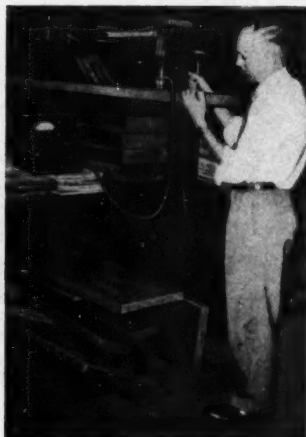
Vertical drilling close to a face is simplified as the drill extends out beyond limits of the carriage when the roller-bearing swivel-mounted wheels are turned 90 deg. The FM-3 mounts an X-71-WD rock drill as its drilling unit. It handles 6-ft steel changes and is good for holes 24 ft deep. Bits to 4 gage can be used.—Ingersoll-Rand Co., Dept. RD, 11 Broadway, New York 4, N. Y.



## PORTABLE AGGREGATE DRYERS

—Portable unit is specially designed to dry aggregates for black-top paving. A shallow hole is dug at the feed end of the machine to accommodate foot of the cold elevator which raises aggregates to the hopper. They are then gravity-fed into the revolving drum of the dryer

heated by the same fuel that drives the 35-hp engine. At discharge end, aggregate is picked up by the discharge elevators and carried to the discharge. Main drum, engine, and frame are towed; elevator folds over; feeders, ducts, and cyclone are carried by the truck.—Standard Steel Corp., Los Angeles 58, Calif.



## METER MEASURES MOISTURE—

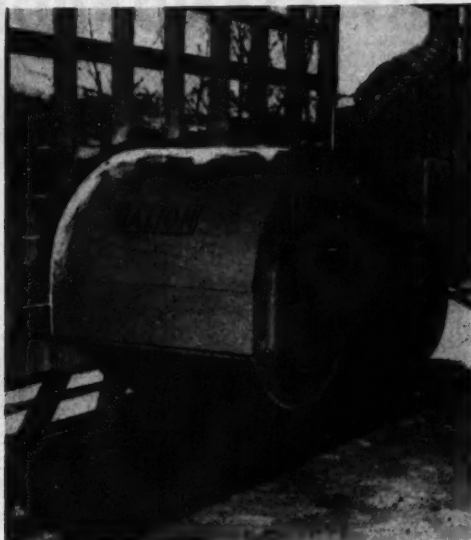
All-purpose meter measures moisture content of lumber, plaster, and other materials. The Model 8008 has a higher range than previous models running from 7 to 150%.—Weston Electrical Instrument Corp., Tagliabue Instruments Div., 614 Freylinghuysen Ave., Newark 5, N. J.



## New Machinery, Tools and Equipment That Will Help You on the Job



**NARROW-KERF SAW IS GASOLINE POWERED**—Model 26-LCS saw features a narrow-kerf chain and a Gilmer (U. S. Rubber Co.) gear-toothed rubber-and-fabric belt drive. Concentric bowl carburetor permits operation at extreme angles. Clutch stops chain when engine idles or chain binds in cut. Available with straight blades or bow saws.—Homelite Corp., Dept. CM, Port Chester, N.Y.



**VARIABLE-WEIGHT 5-TON TANDEM ROLLER**—Features of this Gallion roller include hydraulic steering, rugged spur-gear final drive, and constant-mesh transmission. With a transport-towing attachment, the roller is raised from the ground and rides along on a set of auxiliary wheels. Power is from a 25-hp gasoline engine.—The Gallion Iron Works & Mfg. Co., Gallion, Ohio.

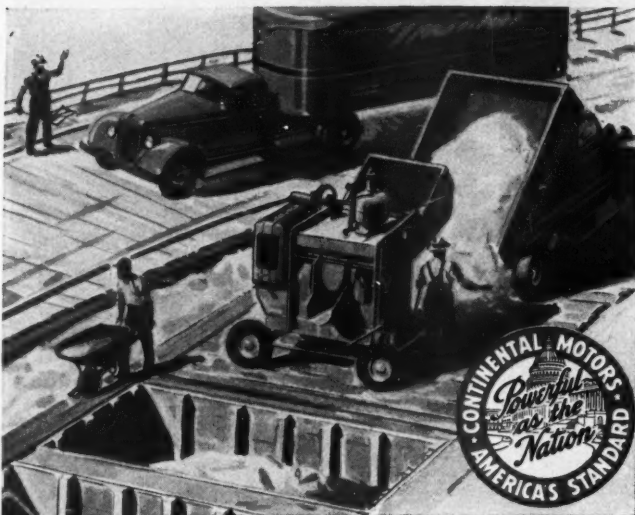


**GASOLINE-POWERED CONCRETE CUTTING SAW**—Guide rails on the Creeper aid in obtaining a smooth-edged straight cut and in eliminating cutting-blade breakage generally caused by side-to-side wobble or the application of off-center pressure. A water-hose attachment is for use with diamond or specially bonded abrasive blades where dust suppression is required. Standard abrasive blades are available.—Martin Fireproofing Corp., 2120 Military Road, Buffalo 17, N. Y.



**COLLAPSIBLE RUBBER-FABRIC 55-GALLON DRUM**—Returnable, reusable drums are suitable for handling oils, greases, paints, dry powders, and a variety of chemicals. These collapsible drums are made of Ustex cord fabric impregnated with synthetic rubber and molded in one piece. The drums are equipped with fittings for filling, emptying, lifting, and handling. Weight, when empty, is 20 lb.—United States Rubber Co., Rockefeller Center, 1230 Avenue of the Americas, New York 20, N. Y.

# SAVE BY STANDARDIZING

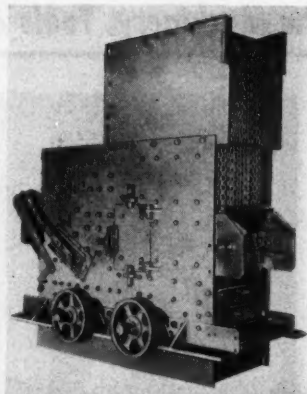


## ...on CONTINENTAL RED SEAL POWER

Experience of users all through the construction industry points to one big fact with dollars-and-cents meaning for YOU: the broader the operation, the more time and money you'll save by standardizing on Continental-powered equipment and machines. . . . You'll simplify your service, for one thing, because so many Continental parts are interchangeable from model to model. And even more important in its long-range results, is the expert engineering of every Continental to its work. . . . Whether it's driving a compressor, pump, mixer, winch, conveyor, earth-mover, trencher, or highway or industrial truck, each Continental Red Seal has been built for the use in which you find it. It will operate efficiently, dependably, with minimum time out—and by reason of this same matching, so will the machine. . . . When buying specialized equipment, keep these facts in mind. Insure satisfaction by choosing a make with Red Seal built-for-the-job power.

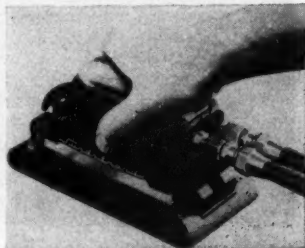
GOOD EQUIPMENT IS BETTER WITH CONTINENTAL RED SEAL POWER

**Continental Motors Corporation**  
MUSKEGON, MICHIGAN



### HEAVY-DUTY IMPACT BREAKER

—Feature of the PMCO Impact Master is its controlled-impact-action, said to control the breaking operation and direct the flow of material through the machine to produce a highly uniform gradation cubical aggregate. Other features are: High ratio of reduction, low horsepower per ton of finished aggregate, easy access to all parts, and large volume production. The two rotor members have three rigidly supported hammers each. Both rotate in the same direction at speeds of 550 to 1,000 rpm. Size of finished material is governed by speed of rotors and adjustment of a stripper bar and a lower screen grate. The Model 3240 Impact Master will accept quarry run rock to 50 in. long that will pass through a 32x40-in. operation. It has a capacity of 250 tons per hr of minus 2½ in. in average limestone. In many types of rock, capacities of 125 tons of minus 1 in. are possible. Power is provided by 125- to 150-hp gasoline or diesel engines, or electric motors. Other models are available with capacities ranging up to 500 tons per hr.—Pettibone Mulliken Corp., Construction Equipment Div., 4700 W. Division St., Chicago 51, Ill.



**AIR-DRIVEN SANDER** — Straight-line-action single-pad sander is air-powered. Straight-line action is said to leave no swirls or pressure marks. It operates wet or dry, and can be used over both flat or curved surfaces. — Sundstrand Machine Tool Co., Pneumatic Div., Rockford, Ill.



**P&H**

**TRUCK CRANES**

# GREATER STABILITY

*around the full 360°!*

Stability means work-ability! P&H gives you more of it — around the entire 360° of operation. Size for size, on this basis, no P&H Truck Crane has ever been outlifted.

Here's modern hydraulic control at its best—fast, smooth, responsive . . . lets you place heavy loads accurately, safely — handle light loads with maximum speed.

Dual power gives you brisk travel speeds — ample working power for every job. This is not a one-engine compromise. Available with remote control.

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P&H Excavators and Truck Cranes are more easily converted for the various types of service shown below — with hoist and digging drums on one shaft, the need for auxiliary shafts and gearing is eliminated. You also have a choice of gas, Diesel or electric power. Ask for literature on the size you need.

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FAB HOMES

# Battle with stubborn rock ends with completion of Boston's 5¼-mile tunnel

"Toughest rock I ever saw," says J. R. Glaeser, referring to the 27,900-ft Boston City Tunnel completed in November, 1950, by Perini Maney Walsh & Rugo Construction Companies for the Metropolitan District Water Supply Commission of Boston. Glaeser, job manager for the \$9,530,000 contract, is a veteran tunnel-driver who has tackled a lot of hard rock in his time.

City Tunnel, part of Boston's Hultman Aqueduct, is the first link of a pressure tunnel under Metropolitan Boston. For the most part a bore of 12-ft finished diameter, it extends from the end of the pressure aqueduct at Riverside, Weston, under Newton, to the Chestnut Hill Pumping Station in Boston.

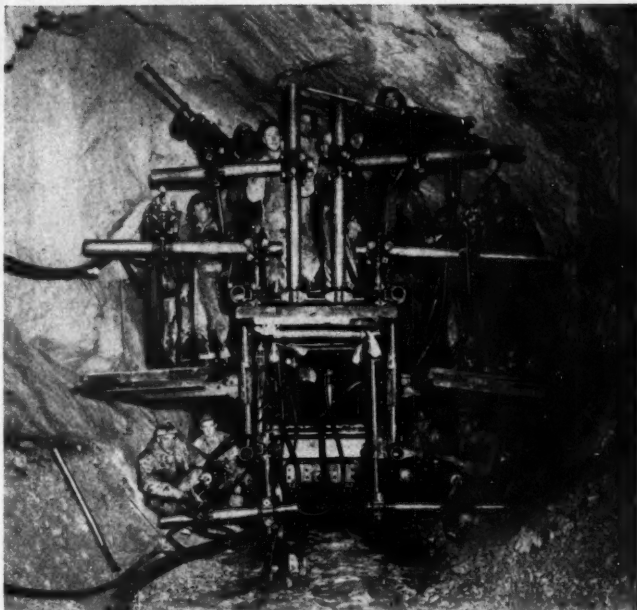
Driven from four headings, the job required the excavation of 190,000 cu yd—most of it a very hard conglomerate for 23,900 ft of the job. Long stretches of melaphyre, basalt, and argillite proved to be tough and hard to penetrate. Drilling and blasting this kind of rock was a real challenge to the contractors because ordinary detachable bits averaged only 6 inches in this stubborn rock before they became dull. And when serious delay appeared certain, carbide insert bits came to the rescue, reducing costs and improving drilling speed as much as 50 per cent.

Drill jumbos, each mounting six 4-in. drifter drills, put in 50 to 60 holes, 10 ft deep, in three or four rounds every 24 hours. Daily progress averaged 30 ft at each heading.

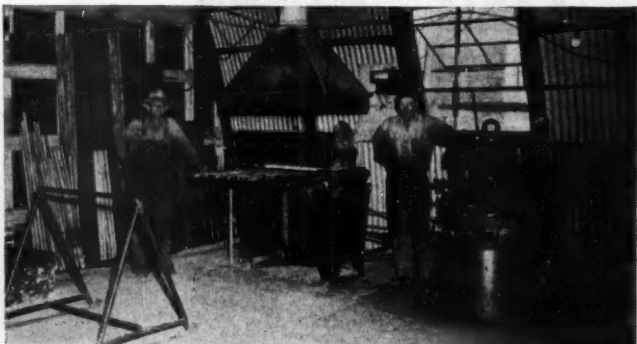
The contractors drilled 1,495,000 lineal feet of blast holes, using Bethlehem Hollow Drill Steel every foot of the way. "Your drill steel did an excellent job," says Glaeser, "far better than might be expected under very difficult drilling conditions."

## BETHELEHEM STEEL COMPANY BETHELEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation*



Drill jumbos mount six 4-in. drifter drills. Using carbide insert bits and Bethlehem Hollow Drill Steel, the contractors averaged 30 ft of advance daily through very hard types of conglomerate rock formations.



This well-equipped blacksmith shop near Shaft No. 6 kept the drilling crews supplied with rods of Bethlehem Hollow Drill Steel, a reliable steel that hard rock men can rely on when the going is tough.

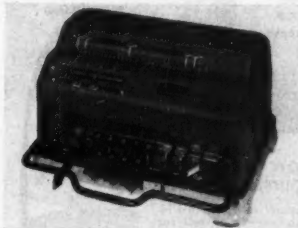
Contractors: Perini Maney Walsh & Rugo Construction Companies—Jesse R. Glaeser, job manager; Charles Kelley, general superintendent; P. M. Putnam, chief engineer.

Metropolitan District Water Supply Commission of Boston, Mass.—Fred Gow, construction engineer; John Verdic, resident engineer; Karl R. Kennison, chief engineer.

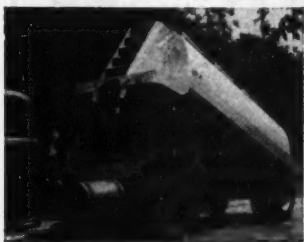
## BETHELEHEM HOLLOW DRILL STEEL



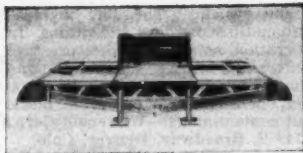
**ROOF RESURFACER**—Roof coating and plastic cement can be applied on wet roofs, the manufacturer states. Known as Wet Surface Rufferseal, it is said to cut through surface moisture and resaturate roofing materials below with asphaltic oils. Also available is a plastic cement known as Wet Surface Rufferseal used for patching wet roofs, copings, and flashings.—**The Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, Ohio.**



**CALCULATING MACHINE**—Swedish-made calculator features simplicity of design and ease of operation. It has a two-bank keyboard with ten digits, permitting one-hand operation—leaving the other hand free for paper work. All processes are fully visible to the operator so that each figure set can be instantly checked in its register. Facit machines are available in four models. The TK is a small hand-operated calculator equipped to handle the four basic mathematical processes. The Lx, also manual, has a larger capacity than the TK. The NEA is an electrical unit with automatic division and semiautomatic multiplication. The ESA-O is fully automatic for calculations where higher speed is essential.—**Facit, Inc., 500 Fifth Ave., New York 17, N. Y.**



**CABLE-DUMP CEMENT TRAILER**—Lifting unit on this cement dump trailer consists of a 12,000-lb winch, lift arms, and the cable. The trailer is available with capacities to 30,000 lb. Features include: Reduced maintenance, lower fuel costs, and extreme maneuverability. The manufacturer states that dumping is accurate even with the cab at a 90-deg angle to the trailer. The trailer tilts to a 60-deg angle.—**Stewart & Stevenson, 1718 Congress, Houston, Tex.**



**PORTABLE TRUCK SCALE**—Thurman scale can be dismantled for moving by removing the six nuts that hold the side arms in place. Remainder of the scale is then easily lifted as a unit. Extra-large steel bases support each scale, and no pits

or concrete footings are required. The scale can be loaded with a light crane or winch. Special front-end loading eyes are provided for winch loading. Standard capacities are: 18, 20, and 30 tons, with deck lengths from 18 to 30 ft. Special sizes are available to order.—**The Thurman Machine Co., 156 N. 5th, Columbus, Ohio.**

**AIR-LINE CLEANER**—Line of valves is designed for automatic removal of contaminants and precipitates from compressed air lines, after-coolers, sumps, tanks, and air-

## CUT DITCHING COSTS

with a **BRISCOE DITCHER**

✓ IT DIGS  
✓ IT CLEANS  
✓ IT SLOPES

Faster, more complete cleaning jobs plus faster, deeper new ditches with the Briscoe Ditcher.

Cuts costs of digging a ditch to as low as \$24 a 1/4 mile! Largest model moves over 500 cubic yards of earth an hour.

**CUTS COST TO 2¢ A CUBIC YARD**

8 separate hydraulic controls give operator push-button action on steering, depth, leveling, tail support, wing angle, and spoil wings. Operates smoothly in water, thick brush, or heavy soil.

Complete demonstration for any Conservation District without obligation.

Write Mel Briscoe  
General Manager  
Dept. D1

**E. V. Briscoe & Son:**

In muck and weed, wire grass and tule, make flags and tubes... the Briscoe Ditcher... took it all... with colors flying, we're thoroughly satisfied.

Clear Lake Water Co.

**E. V. Briscoe & Son:**

We own and use 5 Briscoes for cleaning intervals... which have cut costs for us. Fresno Irrigation District

**E. V. Briscoe & Son:**

A cost reduction from \$300 a mile to \$10 a mile. Fresno Canal Co.

**E. V. BRISCOE & SON KERMAN CALIFORNIA**

## UP TO 60% SAVINGS ON CONCRETE FORMING

### with **Gates CONCRETE FORM TIES**

From the beginning of the form, the Gates method starts producing economies in time and materials.



### IN DENVER—OVER 80% OF ALL HOME BUILDERS USE GATES FORM TIES

The simplicity of Gates Form Ties combined with the clean, even jobs which result from their use have made them mandatory in Denver.



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- ✓ EFFORT SAVING
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## Gates & SONS

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DIVISION



80 SO. GALAPAGO  
DENVER, COLO.

brake systems. The line includes automatic separators and drains. In operation, as air is used, a pressure differential raises diaphragm and shaft, seals bottom of middle chamber, opens bottom of sump, and blasts out contaminants.—Wilkerson Corp., 1749 S. Broadway, Denver, Colo.



**ENDLESS HACK SAW** — British-made hack saw will cut through any size material without being restricted by the frame. Return stroke is automatic: an enclosed spring returns the blade after each stroke. Or, the spring can be locked, permitting normal use of the saw. Blade is supported in the front casing by three hardened steel balls. Any standard 10- or 12-in. blade will fit.—Ziskind Co., Inc., 49 W. 37th St., New York 18, N. Y.

**MATERIALS HOISTING TOWER**—Light-duty tower is composed of standard sectional scaffolding equipment. It comes complete with gasoline or electric power unit, guide rails, cable and pulley equipment, cage, and clutch. The Waco materials hoisting tower is available in heights to 120 ft.—Wilson-Albrecht Co., Inc., 3568 Wooddale Ave., Minneapolis 16, Minn.



**EASY-POUR TILTER**—Steel cradle on easy-pour tilter (Model 15) fits standard 5-gal. cans. It is designed to provide a safe and easy method of pouring liquids into small containers. Or, its rocking motion can be used to mix various liquids together.—General Scientific Equipment Co., 2700 W. Huntington St., Philadelphia 32, Pa.

## Announcing **NEW BLACKMER HAND PUMPS**

for  
**CONSTRUCTION  
FUEL & OIL  
DISPENSING**

Available  
From  
A.E.D.  
Suppliers



### NOW SERVICE FIELD EQUIPMENT EASIER

Capacities to 28 GPM. Available in models for every on-the-job or supply house use. Locking device optional. Handles all oils, fuels, solvents, etc. safely.

See your equipment supplier or write factory for details and prices. Ask for Blackmer HP6 folder.



### BLACKMER PUMP COMPANY

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## SANSTORM LOW-COST SANDBLASTING



"Put a Sanstorm on the job and you blast high costs!"

Save with Sanstorm's exclusive Non-Stop, Non-Plug Action. Simple, rugged construction insures long life, trouble-free operation.

With a heavy duty model or husky little portable, you Save with Sanstorm!

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SANDBLAST MACHINES

Santa Clara & H Sts. Fresno, California  
DEALERS IN ALL PRINCIPAL CITIES

**You Can Pay \$50 More  
and Still Not Beat the**

# 8" HEAVY-DUTY LECTRO-SAW only \$92.50

**for •ABUNDANT POWER  
•SPEEDY SAWING •EASY HANDLING**

If you're like most people, you rate a tool by the work it does . . . not by the figure on its price tag. That's why it will pay you to try the 8" Heavy-Duty LECTRO-SAW! Ruggedly built for heavy-duty sawing, this husky Saw gives you the features and performance you'd expect to find only in a saw costing much more. Yet it costs you only \$92.50! And it soon pays for itself in time and money saved on a raft of jobs!

LECTRO-SAWS are built by 40-year-old BLACK & DECKER, world's largest maker of quality electric tools. See your building supply dealer for a demonstration of LECTRO-SAWS—8" Heavy-Duty model, \$92.50; 6" Heavy-Duty model, \$56.50. Write today for free, detailed catalog to: HOME-UTILITY Div., The BLACK & DECKER MFG. Co., Dept. 659, Towson 4, Md.  
**A PROFESSIONAL SAW . . . . . AT A POPULAR PRICE**



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BLACK & DECKER Mfg. Co.

**Complete Safety  
Features—telescoping  
guard—instant-  
release trigger switch**



**Powerful universal  
built by B&D especially  
power sawing on A. C. or D. C.**

**Tests Prove** the superlative power and cutting ability of the 8" Heavy-Duty LECTRO-SAW! To make the test shown below, a variable-speed conveyor motor was hooked up with a chain to each saw to pull the saw through the wood in a ripping cut. What's more, while Saws "B" and "C" were in the same price range, Saw "A" costs almost \$50 more than the 8" Heavy-Duty LECTRO-SAW!

**Max. Rate of Feed—Ripping  
3" Dressed Fir (Ft. per Min.)**

<b>8" HEAVY-DUTY LECTRO-SAW</b>	<b>... 17'</b>
<b>SAW "A".....</b>	<b>14'</b>
<b>SAW "B".....</b>	<b>8'</b>
<b>SAW "C".....</b>	<b>6'</b>

## EASE OF HANDLING —in the board!

Balance tricks are fine in a side show. But the only place where balance and ease of handling count with a Saw is when it's in the board, sawing wood! That's where the LECTRO-Saw shines!

**The shorter the distance** between the handle and blade of a power saw, the easier it is to control. The LECTRO-SAW's handle-to-blade dimension is held to a minimum ( $\frac{1}{2}$ " less than any competitive saw listed above). Yet the handle is close to the center of gravity for good balance.

**Note the two depth adjustments**—front and rear—on LECTRO-SAW which permit the handle to be kept at a comfortable wrist position, regardless of depth of cut. This is not possible on saws with only one depth adjustment.



## Taller-Made LECTRO-BLADES!



The first saw blades designed specifically to take advantage of the power of a particular saw! LECTRO-BLADES have fewer number of teeth than conventional blades to give a better distribution of work load and produce chips instead of fine saw dust. As a result, they actually increase the output of the Saw!

**Carbide-Tipped LECTRO-BLADES** cut transite and cement board 7 to 12 times faster than abrasive discs. Last 30 times longer between sharpenings than regular steel blades. Lose less diameter than ordinary blades when resharpened.

**For extra-long life**



**AIR-POWERED SMALL DRILL**—Heavy-duty drill features: Stub-tooth gear train, built-in lubricator, sealed spindle bearing, and a chuck guard for safety. The 9DBW-28A has an

overall length of 5¾ in., and is 13/16 of an inch from side to center of the spindle.—**Reed Roller Bit Co., Cleco Div., 5125 Clinton Drive, Houston, Tex.**

**PREFABRICATED WOOD TRUSSES**—Douglas-fir trusses are factory finished and delivered ready for assembly. No special tools are required for their erection. They have a high strength-to-weight ratio and provide a sturdy, uniform roof support in post-free buildings. Roof sheeting can be nailed directly to the trusses. Available in sizes to 50-ft clear span.—**Farm Building Service, Rochelle, Ill.**



**LONG-BOWL ROPE SOCKET**—Manganese-steel rope socket has wedge and socket grooves corresponding to the correct rope diameter to prevent distortion and crushing of the rope. Crushing and distortion are further guarded against by the combination of long-bowl design and increased wedge angle (wedge grips a length equal to six times the rope diameter). Sockets in sizes up to and including 1½ in. accommodate two rope sizes using the same wedge. Sizes 1¼ to 2½ in. use wedges individually varied in eighths of an inch.—**Electric Steel Foundry Co., 2167a N. W. 25th Ave., Portland 10, Ore.**



## ELLICOTT LITTLE DRAGON® 8" HYDRAULIC DREDGE



**is easy to move by truck  
... easy to assemble at job site!**



Center section of this Little Dragon Dredge is shown in large illustration above just before it was taken off truck at new job site. Little Dragons are ideal for constructing, improving and desilting canals, reservoirs and ponds... are equally efficient for providing fill for swamps, beaches and dams.

Now inland dredging jobs are easily reached and profitably done with Ellicott *Little Dragon*® Hydraulic Dredges. Unique sectional construction (also available in 12" and 16" models) makes disassembly, loading and shipping by truck, rail or water an easy job. Assembly at the new site is simple—requires no special facilities.

No matter what your problem, Ellicott builds a dredge for the job—any type, any size, any service. Only Ellicott offers you 66 years of dredge building experience—design, construction and delivery under a single contract.

For details on versatile, low-cost Little Dragons write today for Bulletin 804. **ELLICOTT MACHINE CORPORATION, 1605 Bush St., Baltimore 30, Md.**



## ELLICOTT HYDRAULIC DREDGES



**PNEUMATIC IMPACT WRENCH**—The model M950 impact wrench has a ¾-in. bolt-size capacity. Impacting takes place only when the nut begins to tighten. Reverse valve is readily accessible to the operator's thumb. The wrench operates on 80- to 100-psi air pressure, and consumes 16 to 17 cfm under load. Features include: Only two impacting parts, no springs or gears, and built-in automatic oiling device.—**Master Pneumatic Tool Co., Inc., 2108 Keith Bldg., Cleveland 15, Ohio.**





... An old respected name on a

*Brand New!*

8,000 Pound Line Pull

**HOIST**

with FIELD-TESTED FEATURES  
for ULTRA PERFORMANCE!



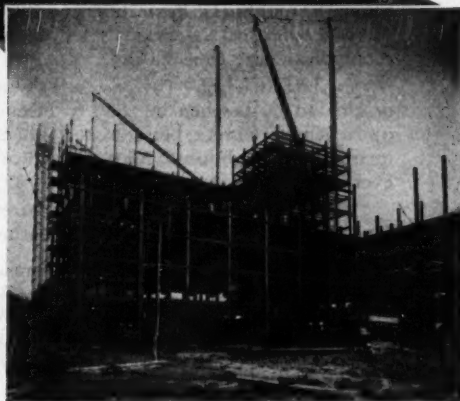
One of the 2 Clyde Frame 5 hoists operating Clyde Steel Erectors derricks on Claiborne Towers, New Orleans.

## 17 Quality Features . . .

On This New, Frame-5 Hoist

Two-piece, internal expanding frictions • Friction bands easily replaced without removing drum • All levers conveniently banked to operator's comfortable seat • Large diameter brakes allow operator to "toe" the brake with full load control • Removable intermediate shaft • Ball bearing mounted shafts throughout for greater line pull with less maintenance and more economy • Chain adjustable without removing chain guard • Steel side frames and bed give more strength with less weight • Full view of drums from operator's seat • Lever bank accommodates additional levers for third drum or swinger • Proper size drums to give most practical rope service • Rolled steel, hook-type pawls, manually engaged, weight released • Totally enclosed automatic brakes, standard on electric, optional on gasoline or diesel • 8,000 pound line pulls at various high speeds • Improved oil-tight chain guard with positive seal • Handles one yard concrete buck at high speed • Bull wheel swinger that allows unobstructed lead of lines from drum to bull wheel.

HOISTS • DERRICKS • WHIRLEYS • HANDI-CRANES • ROLLERS  
BUILDERS TOWERS • CAR PULLERS •



*Write for Free Folder*  
On a MODERN HOIST . . .



**CLYDE IRON WORKS, INC.**

D U L U T H I , M I N N

Subsidiary of Barium Steel Corp.



The  
tougher  
the job...  
the  
greater  
the need  
for

**"HERCULES"**  
RED-STRAND  
WIRE ROPE

Its fitness for tough work has been proved by many years of actual on-the-job performance. Strength, toughness, flexibility, and durability... *in correct balance*... provide safe, dependable, and economical wire rope service.

"HERCULES" (Red-Strand) Wire Rope was originated by Leschen in 1886 to meet the rope requirements of bigger, better material handling equipment—and tough jobs have been its proving grounds ever since.

Let the Red-Strand be *your* wire rope guide. You will find its reputation justly earned.

Round Strand or Flattened Strand—  
Preformed or Non-Preformed—Wire  
Rope Core or Fiber Core. Let us help  
you select the *right* rope for your job.

MADE ONLY BY



**A. LESCHEN & SONS ROPE CO.**

ESTABLISHED 1857

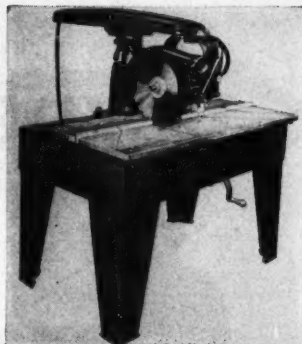
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New York 6  
Chicago 7  
Birmingham 6

Houston 3  
Denver 2  
Los Angeles 21

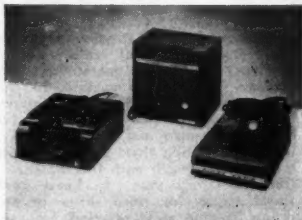
San Francisco 7  
Portland 9  
Seattle 4

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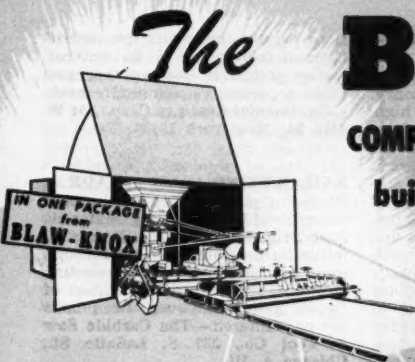


**RADIAL ARM SAW**—Receding-arm saw (Model R-2) is powered by a low dead-rise motor. This motor is said to permit greater depths of cut, because of reduced interference of the bottom of the motor resulting in the arbor being brought closer to the material being cut. The machine is available in 3- and 5-hp models—12-in. blades are recommended for the smaller models; 14-in. blades, for the larger.—DeWalt, Inc., Dept. P-32, Lancaster, Pa.

**EXPLOSION-PROOF MOTORS**—New line of motors is available in ratings from  $\frac{1}{2}$  through 60 hp at 230, 250, 500, and 550 v, with stabilized shunt, compound or series windings. Brushes are accessible through handhole covers in the upper half of the commutator end shield. Standard motors are foot-mounted, but modifications can be supplied less the feet for strap-mounting, or with a face or flange end shield.—General Electric Co., Apparatus Dept., Schenectady 5, N. Y.



**ELECTRONIC SECRETARY**—Automatic telephone answering machine provides constant service when personnel in job field offices must leave telephones unattended. This unit answers the 'phone, takes messages, and tells the caller when his party will return. In case of an emergency at night, the Electronic Secretary can be set to tell the caller where his party can be reached. The unit is easily installed, and is not connected to the 'phone. As an extra feature, it can be used as a portable dictation machine.—Electronic Secretary Distributors, Inc., 801 W. National Ave., Milwaukee 4, Wis.



# The BLAW-KNOX

**COMPLETE PACKAGE** of concrete paving equipment  
builds the country's superhighways and airports

ALL over the country, contractors working the big contracts like Edens Superhighway or the Pennsylvania Turnpike are utilizing the advantages of the *one-source* "Complete Package" of concrete paving equipment.

Here's how the Blaw-Knox "Complete Package" simplifies your problems and adds to your profit. You get every single piece of equipment you need for the job, and each piece is matched to the others to give you the assembly-line production that keeps you ahead of schedule.

In addition, you get all the benefits of *one source* of supply . . . all your equipment on *one order*, in *one shipment*, and all covered by *one financial arrangement*. The field performance of each machine is backed by *one undivided responsibility*. One dependable distributor organization provides a ready source for service or parts.

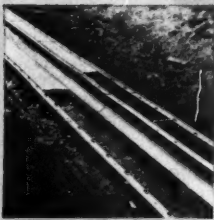
When so many contractors are profiting with "package" equipment, why don't you make sure of the bidding advantages you get with the Blaw-Knox "Complete Package"? Ask your Blaw-Knox distributor for details today.



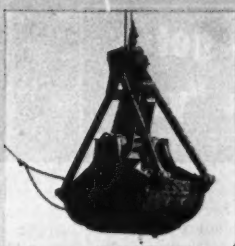
Blaw-Knox Subgrader rides on Blaw-Knox Steel Road Forms on the Taconic Parkway job near Poughkeepsie, New York.



Blaw-Knox Paving Spreader and Finishing Machine at work on Edens Superhighway between Chicago and Milwaukee.



Steel Curb and Gutter Forms. One set handles every curb, curb and gutter, integral curb or side-walk job.



Blaw-Knox Clawshell Buckets are available in a size and type to fit your job.



Blaw-Knox Steel Road Forms are self-aligning, easy to set and strip.



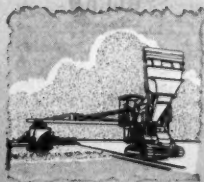
Blaw-Knox Portable Aggregate Batching Plants and Portable Bulk Cement Plants on the Pennsylvania Turnpike.

# BLAW-KNOX

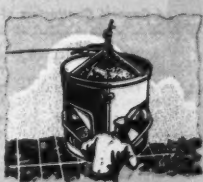
BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.

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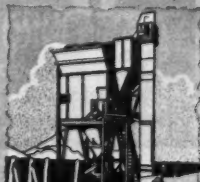
MultiFoot Paver



Concrete Bucket



Hi-Boy Truck Mixer



Truck Mixer Loading Plant

**THERE'S AN AMAZING SAVING IN  
MATERIALS AND LABOR...AND A**

*Sensational  
Improvement in  
your concrete work*

WHEN YOU USE THE

**WORLD'S FOREMOST  
"SHAKE-DOWN ARTIST"**

Vibration now is recognized as the most efficient and most economical method of placing concrete. It permits use of a materials-saving harsher mix. It results in a most homogeneous distribution, potently bonded to reinforcing steel and at joints. And it reduces labor costs up to 60%.

But—there is a very real difference in the effectiveness of various types of vibrating equipment.

For general use, the one-man **Vibro-Plus** Rollgear Internal Vibrator is especially practical. Electrically, gas-engine or pneumatic driven, its simple design and super-flexible shaft allow the operator to get in anywhere—around corners, over forms, into tight and confined areas.

Exclusive patented features assure trouble-free operation over long years of service. For example, the **Vibro-Plus** vibratorhead is unique; it never needs lubrication, yet cannot seize-up. Without interruption, this **Vibro-Plus** Vibrator will continue to produce better concrete construction at lowest cost wherever it is used. Write for complete details and name of nearest distributor.

**VIBRO-PLUS** Internal Vibrator  
—one of the complete line made by the pioneer in vibrating and compacting.



The **Vibro-Plus** Rollgear Vibrator is available in models delivering from 11,000 to 15,000 vpm. Type **MRSB** is gas-engine driven. **ERSB** is electrically operated. Shafts and vibrator tubes are interchangeable.



**VIBRO-PLUS**  
PRODUCTS, INC.

54-11 QUEENS BOULEVARD  
WOODSIDE, L. I., NEW YORK

#### ANTI-CORROSIVE COATINGS —

Six coal-tar-base anti-corrosive coatings are specially compounded for protection of metals, wood, masonry, and insulation. Steelsaver is a high-gloss coating for application where ordinary corrosive conditions are present. It can be dipped, sprayed, or brushed. Yankee Clipper is specially designed for protection of marine equipment. Rockcoat provides protection from abrasives and non-skid surface for overhead walkways, decks, and ladders. Cermastic B-29 combats extreme corrosive conditions. It has the consistency of soft butter, can be applied by spray or brush, and dries to a high gloss. Concoat 75 resists extreme vibra-

tions, contractions, and expansions. Concoat aluminum is an anti-corrosive protective coating that provides a decorative aluminum finish.

—Continental Coatings Corp., 304 W. 44th St., New York 19, N. Y.

#### NAIL-CUTTING SAW BLADE —

Blade for portable saw machines is recommended for cutting materials containing common nails. It cuts by milling action and will cut through most building materials. According to the manufacturer, smoothness of cut is maintained even when nails are encountered.—The Carbide Saw & Tool Co., 327 S. LaSalle St., Chicago 4, Ill.



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a quick "yes"**

Do architects, engineers and contractors know the exact capacity of any standard paver or mixer that pours their jobs today?

The answer is a quick and positive "Yes." Uniform drum sizes have been established and proper mixing capacities guaranteed by AGC Rating Plates. Always look for the AGC Rating Plate when you buy.



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Affiliated with the Associated General Contractors of America, Inc.

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THE FOOTE CO., INC.  
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KOENIG COMPANY  
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KWIK-MIX COMPANY  
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THE T. L. SMITH COMPANY  
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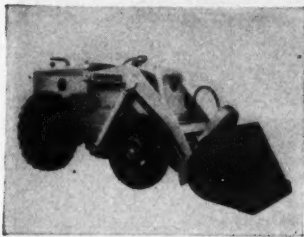
WORTHINGTON PUMP AND MACHINERY CORP.  
Construction Equip. Div., Dunellen, N. J.





#### DOOR AND JAMB TEMPLET—

Two new door and jamb butt templet are designed for use with the Stanley HB8 hinge butt router. The T5 is a complete adjustable templet for cutting two or three hinge mortises on a door and jamb. The T6 is a complete adjustable templet for cutting two hinge mortises on a door and jamb. Both will handle door thicknesses from 1 3/4 to 2 in. Design of the templets permits moving from door to jamb without reversing ends or turning the unit over.—Stanley Electric Tools, Div. Stanley Works, New Britain, Conn.



#### PAYLOADER TRACTOR-SHOVEL

—Addition to Payloader line of tractor shovels has a 1 1/4-yd bucket. It is available with 60-hp gasoline or diesel power. Engine is over the rear drive wheels for maximum tractive effort and capacity. The Model HY features powerful bucket crowd and automatic bucket tip-back. Full-reversing transmission provides four speeds in each direction—to a 29-mph maximum. Digging angle or bucket pitch is adjustable between 1 and 6 deg. Maximum dumping clearance is more than 8 ft.—The Frank G. Hough Co., 706 7th St., Libertyville, Ill.

#### HYDRAULIC CONTROL VALVE—

Open-center single-spool three-way valve operates at pressures to 2,000 psi. It features an externally adjustable built-in balanced relief valve sized to handle full pump capacity up to 14 gpm. Pressure drop through the open center is held to 10.25 psi at 14 gpm. In addition to raise, lower, and locked holding position, a float position is also available on special order. Cylinder and pressure ports are available in 1/4, 3/8, or 1/2-in. internal pipe-thread size. Return port is sized at 3/4 in.—The Parker Appliance Co., 17325 Euclid Ave., Cleveland 12, Ohio.

#### TRANSFER PUMP FOR FLUIDS—

High-speed air-operated transfer pump empties a 55-gal drum of SAE 30 oil in slightly over 2 min. The Speed-Flo Model 82230 is rated at 22 gpm. The pump fits all 2-in.-opening drums and has a built-in regulator to permit finger-tip regulation of the volume of output. Weight is 18 lb.—Lincoln Engineering Co., 5702-19 Natural Bridge Ave., St. Louis 20, Mo.

## Crush Your Own Rock

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EQUIPS  
your  
JOBS



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Rock Crushers, Bucket Elevators, Revolving Screens, Storage Bins, Pulverizers, Chip Spreaders, Heating Kettles, Bin Gates, Feeders, Belt Conveyors, Grizzlies, Air Separators, Sand & Gravel Spreaders, Wash Boxes.

Rather than face the delay and expense of rail or highway shipments of crushed stone, gravel and sand, install your own plant and save both time and money.

Persons who are making money and rushing their work with RELIANCE Equipment.

Write for the latest RELIANCE

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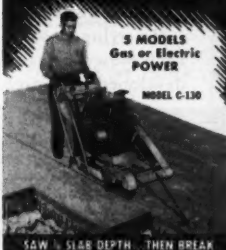
Quality products still available at moderate cost.

UNIVERSAL ROAD MACHINERY CO.

Kingston, N. Y. U. S. A.

DISTRIBUTORS IN ALL PRINCIPAL CITIES OF U. S. A.

#### Stop Damaging Building Floors, Streets & Walks— SAW BEFORE BREAKING



WITH A  
**Clipper**  
CONCRETE SAW

- PATCHES
- TRENCHES
- CONTRACTION JOINTS

You save Time and Material when you cut straight, smooth edges with a Clipper Concrete Saw before breaking out for patches, trenches or machinery bases. Eliminate radial cracks—stop spalling! Imagine...Saw up to 12" per minute 1" deep in limestone concrete!

#### GENUINE CLIPPER DIAMOND BLADES

Whether cutting Limestone, Flint, Gravel aggregate concrete or Asphalt (green or well cured)... there's a Clipper Diamond Blade to cut fast and economically.

- Experience Proves  
A Concrete Saw Must Have  
These Clipper Features:
- CLIPPER "NO SHOCK" SUSPENSION...fluting 3-point suspension protects blade
  - POSITIVE SCREW FEED...instant control for lowering or raising blade from cut
  - ADJUSTABLE DEPTH LOCK...permits pre-setting of cutting depth—instantly adjusted
  - STREAMLINED BEARING HOUSING...permits full depth sawing. Factory greased and sealed

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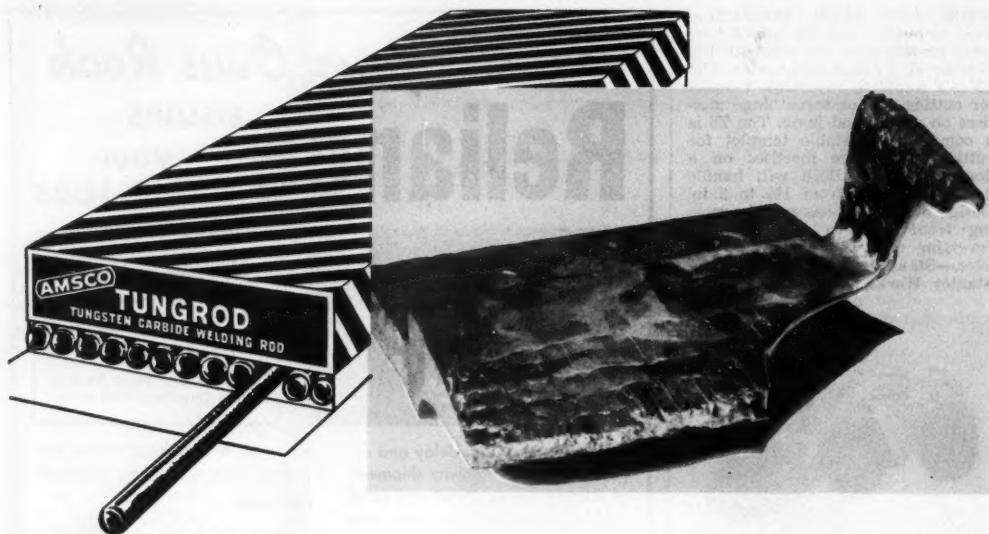
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# Saved

## HUNDREDS OF DOLLARS PER MONTH IN PULVERIZING!

An example of how the AMSCO Hardfacing System can help you fight wear profitably

### Here's why the AMSCO HARDFACING SYSTEM can save you money

Hardfacing recommendations are as sound as the manufacturer who makes them. For a half-century, Amisco has specialized in fighting the high cost of wear—first with manganese steel and later with another big weapon . . . AMSCO Hardfacing Rods and Electrodes.

The result is the AMSCO Hardfacing System . . . where a wide range of Amisco Rods are selected for use according to a systematic appraisal of the equipment part and wear factors involved.

Whether your particular problem is one of wear caused by impact, abrasion, heat, corrosion—alone or in combination . . .

Amisco has both the research facilities and the years of on-the-job experience necessary to help you make important reductions in your operating costs.

A large Pennsylvania brick company was faced with this problem: their pulverizer plows wore out every two weeks due to extreme abrasion of clay with a high silica content. An expensive period of down-time and replacement labor resulted.

In trying to stop this high replacement cost, a test was made. Each plow was hardfaced with AMSCO Tungrod—specially developed by Amisco research for high resistance to abrasive wear.

**Result? The plows hardfaced with AMSCO Tungrod lasted 4 times as long . . . 3 out of every four replacement jobs were eliminated! The saving amounted to several hundred dollars each month!**

AMSCO Tungrod permits big savings—through longer service and fewer replacements—on many other applications. If you have an equipment part used in cutting or pulverizing non-metallic materials, the possible savings—to you—are too big to be overlooked!

Write today for illustrated hardfacing catalog — and nearest distributor's name.

**AMSCO**  
WELDING PRODUCTS

AMERICAN

**Brake Shoe**

COMPANY

**AMERICAN MANGANESE STEEL DIVISION**

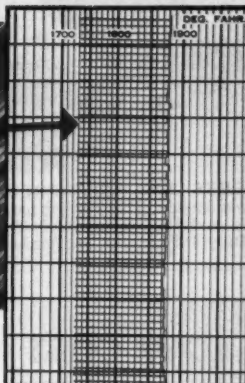
385 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.

# ALL ROPES look ALIKE... but

IN

GRAIN SIZE OF STEEL IS ALWAYS UNIFORM



What has grain size of steel to do with longer rope life?  
Plenty!

That's because in every commercial grade of wire rope, there's a certain critical grain size that gives highest resistance to bending fatigue. In Wickwire Rope we make sure that you get this definite grain size and that it is always uniform to exacting McQuaid-Ehn® standards.

Only a fully integrated company like Wickwire can give you this big advantage...because such control of grain size is possible only where all phases of manufacture are under constant check and test...starting with the melting and refining of the steel and continuing through heat-treating processes and cold drawing of the wire.

Here again—Wickwire goes "beyond specifications" to give you assurance of wire rope that can't be beat for reliability, safety and longer life.

\*For detailed information on the McQuaid-Ehn test, write to our Sales Office, at Palmer, Mass.

LOOK FOR THE YELLOW TRIANGLE ON THE REEL

Automatic heat control in our patenting or heat treating furnace operates within such close limits that the temperature in the furnace never varies more than a small fraction of one per cent.

## WICKWIRE ROPE



A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.  
SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Casper • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Houston • New York  
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PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California



**BUCKET FOR LIFT TRUCKS**—Power bucket accessory for handling bulk materials is available for all Hi-Duty lift trucks. The bucket has

a 9-ft capacity, and features flared sides and lip to facilitate clean-up along walls and into corners. Bucket action is controlled by hydraulically actuated cylinders. The bucket can be opened or closed at any height up to 7 ft 10 in. on a 9-ft mast. Bucket opens and closes through a full 90-deg arc.—**Transit Truck Co., 2477 N. W. 23rd Ave., Portland Ore.**

**SUBMERSIBLE PUMP**—Water-cooled water-lubricated submersible pump has many features: It is a self-priming deep-well pump installed below water level; it is easy to install by added pipe lengths to the depth of the water; and no jets,

rods, or shafts are required. This pump is designed to deliver in excess of 70 ft with well diameters of 4 in., and larger. Motor relay and capacitor are located in a control box above ground.—**Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.**

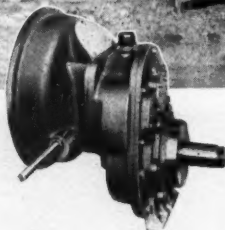


**DUAL-PURPOSE HAND TRUCK**—Built-in hydraulic hoist permits use of hand truck in loading and unloading heavy cases and barrels. Hoist has a capacity of 500 lb., and will lift to a tailgate height of 54 in. Platform measures 22x19 in.—**Clark-Hopkins Equipment Corp., Philadelphia 23, Pa.**



Repowered dragline owned by American Aggregates Corp., Indianapolis  
... with a Cotta Reduction Unit

Here is another example showing how owners of costly machinery can repower their equipment, using Cotta Reduction Units to convert the greater speed of the new engine to the lower rpm required by the old machine. As new machinery rises in price and becomes harder to obtain, investigate this low-cost method of keeping old equipment on the job, performing with new efficiency!



Broad range of ratios

Input torque from 150 to 1350 foot pounds

For use on cranes, shovels, rock crushers, generators, pumps, etc.

**THIS INFORMATION WILL HELP YOU**

Diagrams, capacity tables, dimensions and complete specifications sent free on request. Just state your problem—COTTA engineers will help you select the right unit for best performance. May we work with you?

**COTTA TRANSMISSION CO., ROCKFORD, ILLINOIS**



**COTTA**  
HEAVY-DUTY  
REDUCTION UNITS

"Engineered-to-order"



**COPIES IN 1 MINUTE**—Desk-top copymaker for use with the Polaroid Land camera turns out dry, finished copies of documents, sketches, drawings or photographs in 60 sec after the camera shutter is snapped. It handles objects measuring up to 11x14 in. Finished pictures are 3 1/4 x 4 1/4 in. The process requires no tanks or liquids—copy comes out of the camera dry and ready for use. Built-in timer on the side of the case shows when the necessary time has elapsed. Double polarization of the light—at the source and at the camera lens—eliminates all trace of shine or reflection.—**Polaroid Corp., Cambridge 39, Mass.**



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## 1. GREATER STABILITY

Lets you put more on the hook — and work faster.

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Live roller circle • Low pressure hydraulic control • True tractor type crawlers • All-welded construction.

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P&H service is fast, efficient. Your dealer carries genuine P&H repair parts — backed by 20 strategically located branch offices and warehouses.

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CORPORATION

P&H Excavators and Truck Cranes are more easily converted for the various types of service shown below — with hoist and digging drums on one shaft, the need for auxiliary shafts and gearing is eliminated. You also have a choice of gas, Diesel or electric power. Ask for literature on the size you need.

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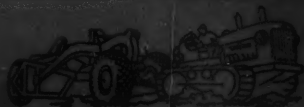
POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PNEUMATIC HAMMERS

# "Big Red"

turns prairies into projects...



**BAREFOOT EASE** on a hot summer day in Memphis, Tennessee!  
This TD-24 and another big red International belonging to the  
G. & Z. Construction Company do all the grading and improvement  
work on a new Memphis housing project.





## Contractors tighten up the time cycles with International's "Big Red" champ

When the champ "goes domestic" and the world's most powerful crawler turns to housing projects, towns take shape while you watch.

When the TD-24 lets loose its power and speed to grade a road, fill a swamp, or doze off home sites on hillsides—the work gets done almost before you can say "Where's the concrete?"

Here's what's behind it—here are the facts that make the big red International TD-24 the champ of the time cycle:

- 148 maximum drawbar horsepower—more than any other crawler.
- Eight forward speeds, eight reverse.
- Speeds up to 7.8 mph in either direction.
- Synchromesh transmission—you shift "on-the-go."
- Exclusive International push-button, all-weather starting.
- Planet Power steering—with finger-tip control for pivot turns, feathered turns, turns with power on both tracks plus instant shift up or down one gear without declutching.
- Reserve torque overcomes overloads, increases drawbar pull for bigger scraper and bulldozer loads.

Contractors, operators, men who know performance are passing the word around. They're telling each other how the TD-24 does more work more easily, in less time, than any other crawler on the market.

Ask your International Industrial Distributor for the whole story. Find out about his service facilities, his trained mechanics and expert parts men, who are on the job to keep your International power on the job, now when you need it most. Once you get the low-down, you'll be a TD-24 man from then on in.

International Harvester Company, Chicago 1, Illinois



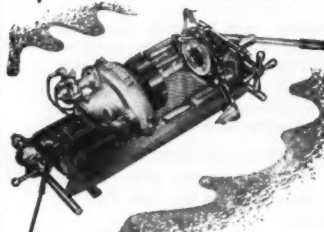
# INTERNATIONAL

## POWER THAT PAYS



- LIGHTWEIGHT
- LOW-PRICED
- EASY-TO-MOVE

## the New Beaver Model E Pipe and Bolt Machine



The new low-priced, lightweight Beaver Model "E" is a "junior edition" of the heavy-duty Beaver Model A—which has, for the past 20 years, been the recognized leader in the field of portable pipe and bolt machines.

The Model "E" uses the same dieheads—the same dies—the same patented interchangeable wheel-and-roller or knife cutoff devices—the same reamer arm and cone—as the Models A and B. This will be a great advantage to thousands of shops now equipped with the Beaver Model A or B because it eliminates the necessity of carrying in stock duplicate dies and parts—thereby preventing endless confusion and needless expense. And remember, there are 195 different kinds and sizes of dies instantly available for Models A, B or E.

Although designed primarily for hardware stores and small piping contractors, BIG contractors will find the new Model "E" useful on jobs requiring extreme portability.

A pipe machine is no better than the service back of it and our 50 years of experience in this field, and our reputation for high quality and friendly service, is your best guarantee of complete satisfaction.

WRITE FOR BULLETIN E

# BEAVER

## PIPE TOOLS

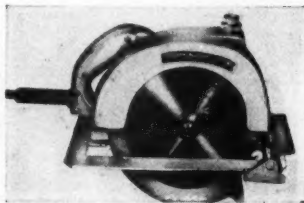
228-300 DANA AVE. • WARREN, OHIO, U.S.A.



**HYDRAULIC PULLER**—Power-Twin hydraulic puller weighs less than 10 lb, yet develops up to 15 tons of power. It features a center hole that makes it adaptable to all OTC pulling systems now in use. The Power-Twin is 5½ in. high, and can be used in any position. Ram travel is 2 in.—Owatonna Tool Co., Cedar St., Owatonna, Minn.



**TRUCK FOR CONCRETE MIXER**—M-10 truck has been engineered and designed exclusively to carry a concrete mixer. It has a 169-in. wheelbase and weighs 11,680 lb. Weight-distribution system is said to permit the short wheelbase. Illustration is of the M-10 equipped with a 6½-yd Challenge mixer that weighs 7,120 lb and has a drum volume of 313 ft.  
—Cook Bros. Equipment Co., 1815 N. Broadway, Los Angeles 31, Calif.



**PORTABLE POWER SAWS**—Four new models have been added to the Tools for Industry line. They are: Model 700 Builders Special power saw with a 6½-in. blade for 2 1/16-in. cuts; model 800 with 8-in. blade for 2½-in. cuts; model 905 with an 8-in. blade for 2½-in. cuts; and model 1000 with 9½-in. blade for 3 7/16-in. cuts.  
—Cummins Portable Tools, Div. of Cummins-Chicago Corp., 4740 N. Ravenswood Ave., Chicago 40, Ill.

- ✓ To cut repair costs
  - ✓ To reduce downtime
- CLEAN EQUIPMENT REGULARLY**



## with Malsbary Cleaners

Regular cleaning prevents corrosion and abrasion; uncovers need for repairs before damage is serious; saves up to 40% of mechanics' time on repair jobs because no grease wiping is needed.

Stubborn road oils, mud, dirt and grease blast away easily with the soap, water and heat a Malsbary Heavy-duty Cleaner delivers at pressures up to 400 lbs. Cleans in ¼ to ½ time required by conventional steam vapor cleaner. Simple, rugged, dependable. Free from gadgets. Model 300 in illustration, 1 of 3 heavy-duty sizes, gives you 5 cleaning actions; pressures of 250 to 400 lbs.; capacities 300 to 2100 gallons per hour.

Call any one of our representatives  
or name of Malsbary dealer  
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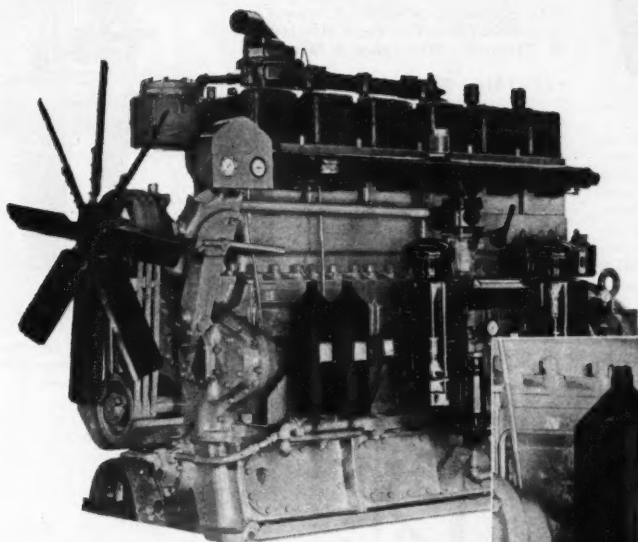
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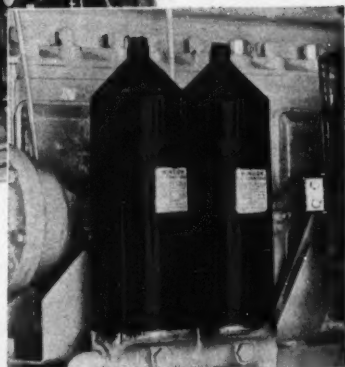
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## ADDED VALUE FOR WAUKESHA OWNERS

### WINSLOW Full-Flow Filters Approved for Certain Engines



Here is a Winslow Lubricating Oil Conditioner, Model 1664-B-51, as installed on a Model 6-LRO Waukesha heavy duty gas engine built for oil field drilling, cotton ginning, irrigation pumping and other uses.

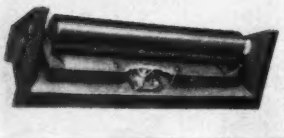
**W**aukesha Motor Company, whose name has been synonymous with quality and dependability on heavy duty diesel, gasoline and natural gas engines for almost half a century, has approved the installation of full-flow Winslow Filters as standard equipment on some of its engine models. To the owners of these engines, this is an important added value. With these positive in-line full-flow filters giving 100% protection to bearings and other moving parts, the added value takes many forms—longer engine life, economical freedom from break-downs and repairs, and sharply reduced costs in both money and man-hours. Whether *your* engine is large or small, old or new, give it the added value of Winslow Filters!

A COPY OF OUR FREE BOOKLET, "THE CASE OF THE DIRTY DRIP," IS YOURS ON REQUEST

## **WINSLOW FILTERS**

213-MCF-1

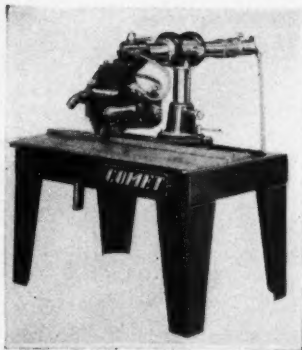
Winslow Engineering Company • 4069 Hellis Street • Oakland 8, California



**CONVEYOR RETURN IDLER** — Self-aligning idler is designed to prevent belt damage caused by roving at the edges on the return run where belt is closely confined between frame and supports. It also assures that the belt is centered when entering the tail pulley. The 33RA idler

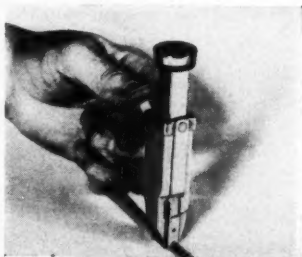
is mounted on a roller-bearing turntable, with the entire assembly tilted 45 deg in the direction of return belt travel. The idler can be used with horizontal or inclined conveyors.—**Chain Belt Co., Dept. HR, 1664 W. Bruce St., Milwaukee 4, Wis.**

**ELECTRIC BIN VIBRATORS** — Semi-noiseless vibrators are recommended for interior bins, hoppers, and chutes. Reduction in operating noise is accomplished by substituting rubber bumpers for metallic striking parts. The vibrators are available in four models. Variable controller permits regulation of intensity of vibration.—**Syntron Co., 500 Lexington Ave., Homer City, Pa.**



**RADIAL POWER SAWS**—Major design change in the new Comet Clipper is a control for raising and lowering the radial-arm column. This control is now located at the front of the machine just below the work table and folds compactly out of way of the operator. Other changes include: Compact grouping of saw controls; improved heavy-oiled felt wipers enclosed in each end of the bearing housing; and a redesigned blade guard and sawdust chute.—**Consolidated Machinery & Supply Co., 2031 Santa Fe Ave., Los Angeles 21, Calif.**

**TEMPERATURE REGULATOR** — Self-contained temperature controller features a clearly marked adjusting dial to permit exact setting in degrees Fahrenheit. It is available in two styles, ½ through 4 in. They are provided completely assembled and require no linkage or adjustment either before or after installation.—**Barber-Colman Co., Rockford, Ill.**



**SMALL-SIZE TACKER**—Automatic pocket-size tacker speeds installation of braided, rubber-coated, single- and double-strand wire, and hollow tube lines. Front and rear guides circle the wire and permit rapid drawing around difficult angles or corners, along baseboards, plaster walls, window frames, ceilings, door jambs, and rafters. Providing a holding power up to 64 lb, staples are driven to desired depth without marring or injuring the wire.—**The Heller Co., 2153-N Superior Ave., Cleveland 14, Ohio.**

**DRIVING 75 FOOT**

# Tubular Piles



**T**HESE 75-foot tapered, fluted, tubular piles with 20-foot extensions were driven to a minimum bearing of 40 tons each by a McKiernan-Terry 10-B-3 Double-Acting Pile Hammer in constructing the new highway bridge at Spring Lake, Michigan. • To insure accurate driving and to protect these long, costly piles from damage during driving, the contractors, Luedtke Engineering Company, chose McKiernan-Terry equipment. For 50 years, whether for driving timber, sheet steel, concrete or pipe piles, contractors have grown to depend upon powerful, safe-to-operate McKiernan-Terry Pile Hammers. • 17 sizes of hammers and extractors are available in the complete McKiernan-Terry line. Write for bulletin giving full data.



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ME-282

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All these blade positions  
—and more too—without  
mechanical adjustments



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Reverse Ditching or Blading

● On most construction work—ditching, low and high bank slopes, wide shoulder reach, etc.—the operator of an Adams Motor Grader quickly and easily obtains all necessary blade positions through convenient cab controls—*without mechanical adjustments*. Only occasional work, calling for extreme reach, requires operator to shift blade on circle or change lift linkage.

The ability of Adams Motor Graders to provide this wide range of blade positions—*without mechanical adjustments*—is one of the big reasons why they are the fastest, most efficient and economical graders on the market. Ask your local Adams dealer for complete information.

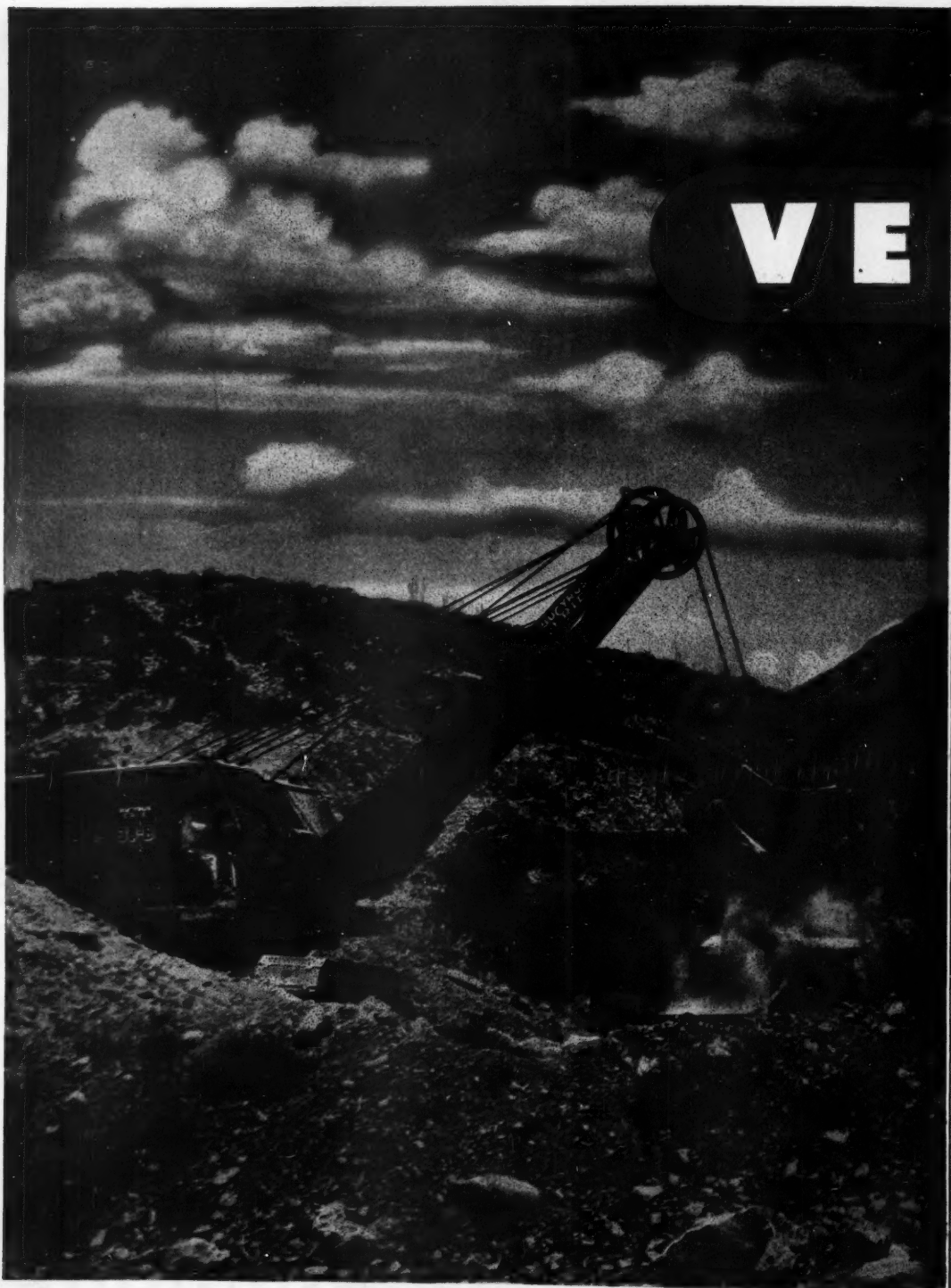
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## Only Adams has this exclusive combination of advantages

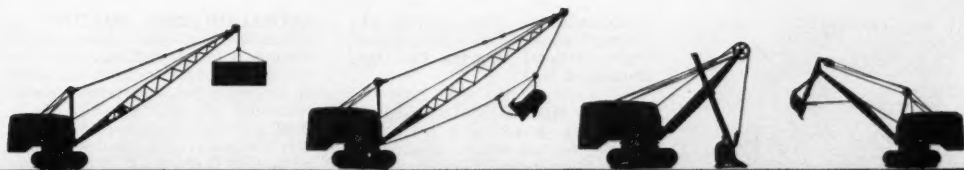
- **8 Overlapping Forward Speeds**... Flexible working range speeds work—increases output—provides high transport speeds.
- **Wide Range of Blade Positions**—Without Mechanical Adjustments... Saves Time in Adapting Machine to Needed Cuts.
- **Positive-Action Mechanical Controls**... Dependable, accurate adjustments—because they're geared... Easy, natural steering.
- **Ample Operating Clearances**... Quick, easy adaptation to work... Operator comfort, convenience, efficiency.
- **Fast, Easy, Servicing Plus World-Wide Dealer Service**... Saves time and money.

*Make your next  
motor grader an*

# ADAMS







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## *Mark of a Preferred Excavator*

**T**HE ability to handle dozens of jobs with peak efficiency on each . . . that's one of the marks of a preferred excavator. And that's one reason why Bucyrus-Eries are favorites of owners and operators the country over.

Take the 1½-yard Bucyrus-Erie 38-B as an example. Its wide-spread mounting and ground gripping treads mean superior stability for fast crane, dragline, shovel or dragshovel service. Its compactly designed, easily accessible main machinery makes conversion simple, facilitates maintenance. Large, high-capacity clutches and brakes meet all demands of excavator and crane service, feature easy-to-make, long-lasting adjustments. "Full-feel" controls mean fast, accurate operation, the operator always in touch with the load.

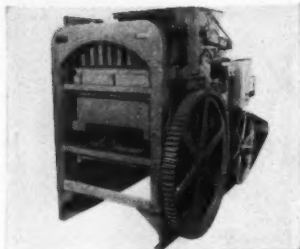
These and many other features combine to provide the versatility of the 38-B and other machines in Bucyrus-Erie's outstanding ¾- to 4-cubic yard line of gasoline, diesel and single-motor electric excavators. Top-notch performance with any front-end equipment is one more reason why Bucyrus-Eries are

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**SOUTH MILWAUKEE, WISCONSIN**

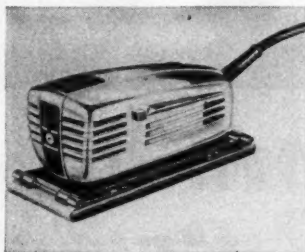


**BLOCK-MAKING MACHINE**—Feature of the No-Pallet machine is that it automatically stacks 64 blocks on a rack, ready for removal and handling by a fork-lift truck. Machine is capable of producing 1,200 blocks per hr. Under normal operation, the ma-

chine makes  $3\frac{1}{2}$  cycles per min, producing 6 blocks on each rack at each cycle.—**General Engines Co., Inc.**, Gloucester, N. J.

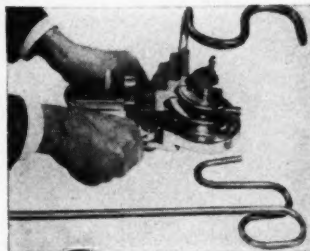
**RAPID METAL FASTENER**—Thumbweld device is a permanent fastener for use where rapid assembly or disassembly is important. Or, it can be used to replace screws or bolts securing parts that are occasionally removed for service or inspection. The Thumbweld fastener is applied from one side and requires only the drilling of a  $\frac{3}{16}$ -in. hole. Thumb pressure is sufficient to lock it in place. It is available for attaching plates with a combined thickness of  $\frac{1}{2}$  in.—**The American Shower Door Co.**, 1028 La Brea, Los Angeles 38, Calif..

**ASPHALTIC PIPE COATING**—Gilsonite-asphalt-base asbestos-fiber coating is formulated expressly for use where corrosion from soil acids or air-suspended acids attack metal structures or pipelines. Pro-Tek-To coating is designed for cold application and requires no heating, special mixing, or preparation. It can be applied by brush, or by special pipe-coating machinery. — **The Warren Refining & Chemical Co.**, 750 Prospect Ave., Cleveland 15, Ohio.



**FINISHING SANDER**—Guild Model 105 sander is a motor-driven unit featuring two counterbalanced transmissions. Abrasive pad revolves in a  $\frac{3}{16}$ -in. dia orbit at 5,000 rpm. This produces an overlapping action especially recommended for wall-board joints, or wherever cross grains meet. The sander is 9 in. long, 3 in. wide,  $3\frac{3}{4}$  in. high, and weighs 5 lb.—**Porter-Cable Machine Co.**, 7022 N. Salina St., Syracuse 8, N. Y.

**CONCRETE-BEAM TESTER**—Machine determines, by direct reading, flexural strength of concrete-beam specimens having a cross-section of 6x6 in. and sufficient length to permit testing on an 18-in. span, according to ASTM C78 or AASHTO T-97. The machine has a maximum flexural-strength capacity of 1,250 psi (15,000-lb load). It is separable into three parts weighing 90, 70, and 35 lb.—**American Instrument Co., Inc.**, Silver Spring, Md.



**TUBING BENDER**—Tool makes offsets and bends up to 180 deg in  $\frac{3}{8}$ -,  $\frac{1}{2}$ -, and  $\frac{3}{4}$ -in. (O. D.) K and L copper tubing, brass, Bundy Weld, steel, and other light-gage tubing. No vise or fixtures are required. The three-in-one bender weighs 5 lb.—**Tal Bender, Inc.**, 417 N. Water, Milwaukee 2, Wis.

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This natural gas pipeline is being constructed between the Texas Gulf Coast and Joliet, Illinois, across all kinds of terrain. At one of the worst spots — this swampy stretch at Newport, Arkansas — the contractor had to put weights on the pipe to sink it below the mud. And under conditions as tough as they come, the Marlow pump shown, a Model 641 Self-Priming Centrifugal, stays on the job and helps construction move ahead smoothly.

This job furnishes another example of Marlow stamina and dependability. **REMEMBER!** Marlow pumps have been helping contractors solve difficult pumping problems for over a quarter of a century. Let Marlow pumps help you cut costs and safeguard your profits.


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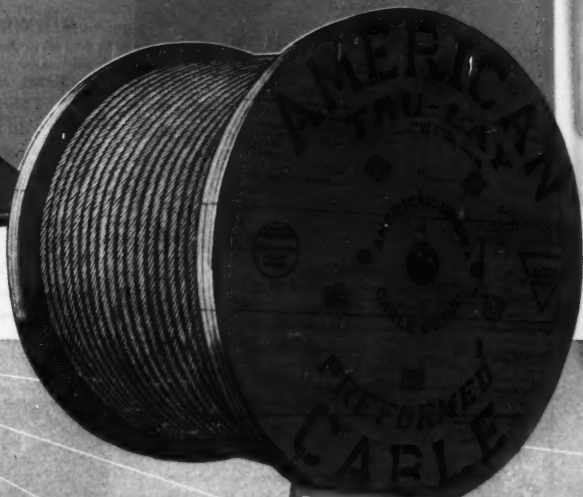
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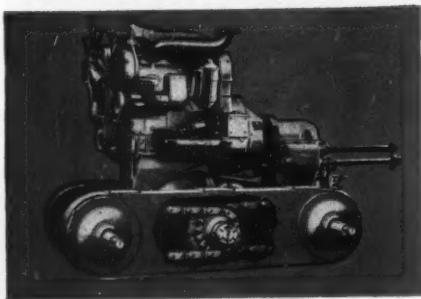
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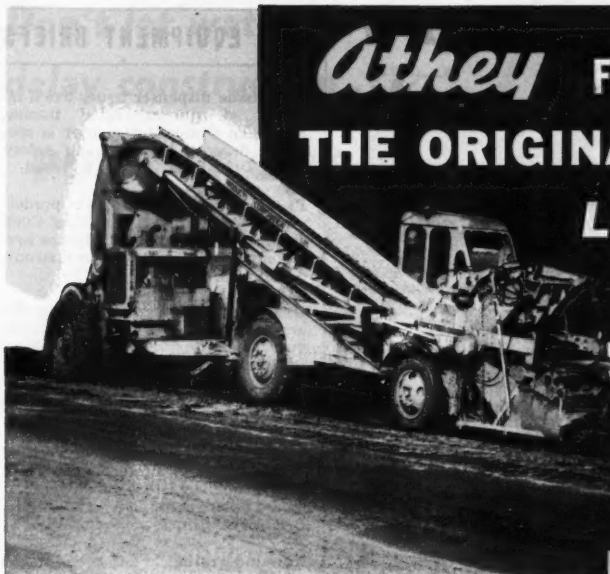


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# Athey FORCE-FEED LOADER

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IMMEDIATE Delivery**

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Now the Force-Feed Loader becomes more versatile than ever with the addition of the new but proved Portable Breaker for crushing and resurfacing. Even with the new companion tool, only one man is required to operate both. This outstanding team takes blacktop, gravel or rock roads and, with unheard of economy, resurfaces and improves them in one easy, fast operation. It picks up, crushes and returns windrowed material to sub-grade. One man — one operation — one result — a load of savings.

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In spite of present conditions, Athey's foresight, which provided for an expansion in production many months ago, now permits Athey "Caterpillar" dealers to give immediate delivery of Force-Feed Loaders and Portable Breakers. See your Athey "Caterpillar" dealer today and let him show you how the Force-Feed Loader, with or without the Side Conveyor or the Portable Breaker, can save you money by doing the kind of job you've always wanted done.



**Athey's Patented Floating Feeder** moves up and down — its entire length — floating over and loading all materials — large rocks, broken concrete, lumps of sod, gravel, sand, snow or others.



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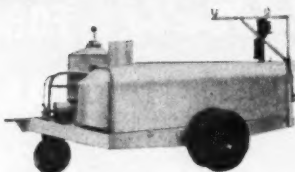


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**Lens-tissue dispenser** issues 5x6 3/4-in. sheets of silicone-treated tissues. American Optical's dispenser is specially designed for keeping safety goggles clear, clean, and polished.

**Plastic finish** for Monorail predecorated panelboard (Armstrong Cork Co.) replaces paint-type finishes previously used. It produces a lustrous, durable surface.

**Lettering guide** is a 6-in. 45-deg triangle perforated to draw accurate guide lines of six different heights. It can also be used for cross-hatching. Other sizes, styles, and angles are available. Made by: Braddock Instrument Co., Swissvale, Pa.

**Self-sticking safety signs** are coated with silicone to protect them from dirt, grime, moisture, and weather. Quik-Labels are made by: W. H. Brady Co., Chippewa Falls, Wis.

**Non-skid grating** is designed for use where excessive oil, grease, water, and icy conditions make walking and working hazardous, and where drainage and sanitation are desirable factors. Firm-grip grating is made by: Bustin Iron Works, Inc., New York 35, N. Y.

**Flame failure safeguard** features a photoelectric cell that "sees" all types of flames. Made by: Combustion Control Corp., Cambridge 42, Mass.

**Angle saw guide** for band saws increases capacity for cutting materials that are longer than throat capacity by twisting the saw band. Made by: DoALL Co., Des Plaines, Ill.

**Washer** for sheet-metal roofing, siding, ductwork, etc., is made of metal and neoprene composition. Fabricated Products Co., West Newton, Pa., now has a demonstration-test kit available for sending to persons requesting it on company letterheads.

**Glasfab membrane** for use with asphalt coatings in waterproofing, roofing maintenance, tank and pipe-protection work is now distributed by: The Flintkote Co., New York 20, N. Y.

**Plastic welding cover plate** resists pitting from weld spatter and provides added impact protection to welding filter plates. Made by: General Scientific Equipment Co., Philadelphia 32, Pa.

**Transmissions** are available for use with single-drum, double-drum, or two separate winches. They provide rapid forward and reverse. Made by: Tel-E-Lect Products, Inc., Minneapolis 16, Minn.

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delay construction . . .**

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**FAST**

**WITH A**

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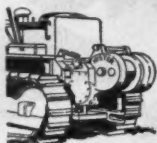
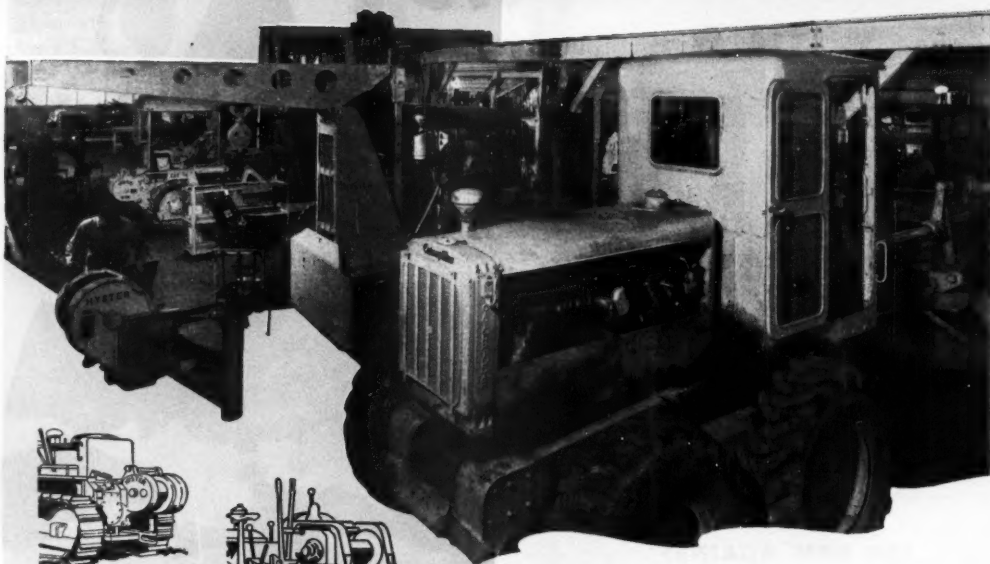
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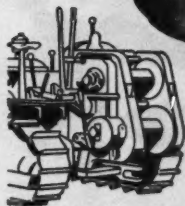
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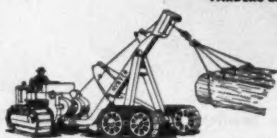
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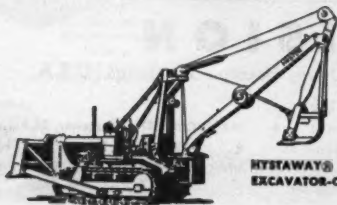
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# Removing a bottle-neck from New York-Boston highway



New 24-foot Texaco Asphaltic Concrete pavement for one-way traffic on Massachusetts State Highway 15. Note traffic using old road at left.



At right of Texaco Asphaltic Concrete pavement, a 10-foot parking strip is being constructed with Texaco Asphalt Penetration Macadam.

The highway linking New York City with Boston is one of the most heavily traveled in the country. To cut down travel time and provide greater safety for motorists using this highway, Massachusetts is converting 10 miles of Route 15, beginning at the Connecticut line, from a narrow, winding two-way road into a modern, divided superhighway.

Massachusetts specified a combination of asphalt types of construction for its important Route 15 project. Traffic moving in each direction will be served by a 24-foot wearing surface of hot-mix, hot-laid Asphaltic Concrete, laid in two 1 1/4 inch courses. The foundation consists of 4 1/2 inches of Asphalt Penetration Macadam, over a 12-inch gravel sub-base. On one side of the Asphaltic Concrete surface is a 10-foot Asphalt Macadam parking lane, with a 3-foot Asphalt Macadam shoulder on the other side.

From the construction of a superhighway down to the application of a dust-layer to a secondary gravel road, Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils provide the road builder with a material exactly suited to his needs. Every Texaco Asphalt product comes from selected crudes. Into its refining goes the broad experience acquired in meeting the varied asphalt needs of America's road builders for the past 45 years.

Helpful information on all types of asphalt construction has been incorporated in two Texaco booklets, copies of which can be obtained free by writing our nearest office.

General contractors on the Massachusetts Route 15 projects are Kelleher Brothers, Inc. and White Oaks Company. Texaco Asphaltic Concrete paving is being laid by Bayer-Mingolla Company, with asphalt supplied by Wachusett Asphalt and Tar Company. Texaco Asphalt for Asphalt Macadam was applied by Lake Asphalt & Petroleum Company.



THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17  
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We offer complete, prompt repair service on all makes of instruments—levels, transits, theodolites, etc.

## New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

**MANUAL VALVES**—Catalog covers the entire range of Shear-Seal valves including shut-off, selector, and manipulator valves for pressures from 0 to 6,000 psi. It contains explanatory copy and illustrations of the Shear-Seal principle featuring a pressure-balanced self-aligning tubular valve seat. An outline shows how to determine proper valve size, and tables list steel pipe data and capacities of hydraulic rams.—**Barksdale Valves, 1566 E. Slauson Ave., Los Angeles 11, Calif.**

**FOUNDATION STRUCTURES**—Brochure (24 pp) on drilled and poured foundation structures describes the complete services of a drilling contractor. Types and applications of foundation structures, pressure grouting, drainage, dewatering, shoring, and subsurface soil exploration are illustrated and described in case-history fashion. Included are tables for assistance in estimating drilled and poured foundation piling and caissons. One table covers volumes of different diameter caisson bells in relation to various size shafts.—**Casey & Case Foundation Co., P. O. Box 151, Maywood, Calif.**

**REAR-DUMP EUCLIDS**—Models 80FD and 82FD rear-dump Euclids of 15-ton capacity are described in this 8-pager. The bulletin describes various features of these off-highway hauling units and lists principal specifications including power units, speeds, and others.—**The Euclid Road Machinery Co., Chardon Road, Cleveland 17, Ohio.**

**PUMPCRETING**—Bulletin describes Pumpcrete machine and methods of pumping concrete through pipelines. It indicates on which types of jobs Pumpcrete will work to advantage; what types of mixes it will handle; and the height and distance requirements of a placing job.—**Chain Belt Co., 1664 W. Bruce St., Milwaukee 4, Wis.**

**WELDING DATA**—Wall chart (12x18 in.) is designed to aid welders in selecting the particular welding, brazing, soldering, cutting, or tinning alloy and flux for a specific job. Data are arranged to make accurate selection as nearly automatic as possible. Also available is a folder devoted to purchasing data containing information on how to enter orders.—**All-State Welding Alloys Co., Inc., 273 Ferris Ave., White Plains, N. Y.**

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- ★ **Front Mounting**  
With application controls at the rear
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Full-circulating, sump type
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Safety link prevents bar breakage
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- ★ **Vee-Jet Nozzles**  
Accurate, non-clogging, no-struck application guaranteed

Rosco has developed these features, many of which are now universally used. Buy Rosco and be assured of the latest design advantages.

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**ROSCO MAINTENANCE UNIT**  
For repair and secondary construction. Both truck and trailer mounted units are available.



Rear Mounted Model RRE

You can't give this little giant  
**TOO MUCH WORK!**

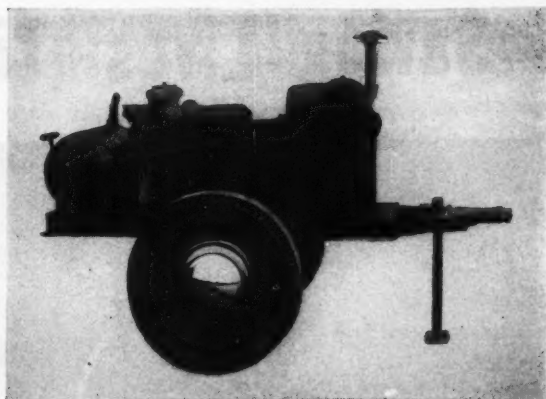
It's 30 cu ft of air power, ready and willing to tackle the host of building jobs that can be powered by air.

You'll find this Worthington Blue Brute portable air compressor has the same stamina as bigger Blue Brutes—60 cu ft and larger—and the same top quality of design and construction.

Ruggedly built 2-stage compressor. Light over-all weight for convenient towing, easy spotting. Worthington's famous Feather\* Valve. Spring-mounted axle. Telescoping leg support. Special industrial model available for use in limited space.

See the "Blue Brute 30" at your Worthington distributor. Write for bulletin to Worthington Pump and Machinery Corporation, Construction Equipment Division, Dunellen, N. J.

\*Reg. U. S. Pat. Off.



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Breaking • digging • trenching • tamping • paint guns • scalers • sprayers • inflating tires • carving tools • chippers • small riveters • nut setters • wood borers.

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**Unbeatable** FOR TIME SAVING  
and  
LOWER JOB COSTS

**GOLD MEDAL JUNIOR  
Safety Swinging Scaffolds  
(Steel or Aluminum)**

Ideal for light-duty jobs, Gold Medal Junior Scaffolds put men at work level faster—in perfect safety.

Easy to transport, quickly rigged—Gold Medal Juniors avoid many of the inconveniences common to rope tackle.

Steel wire rope—which resists chemicals, dampness and abrasion—replaces dangerous black and falls.

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All types of scaffolding for every need—conveniently available through branch offices and distributors from coast to coast.

Used by hundreds of builders the country over. Write for illustrated Bulletin J-6 and see how Gold Medal Junior Scaffolds can help you.

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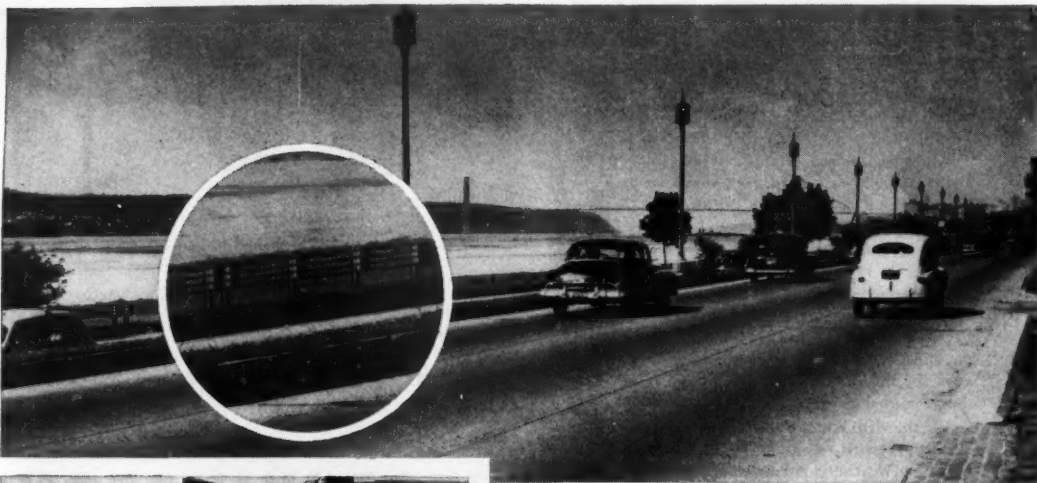


For Greater Safety...Efficiency...Economy

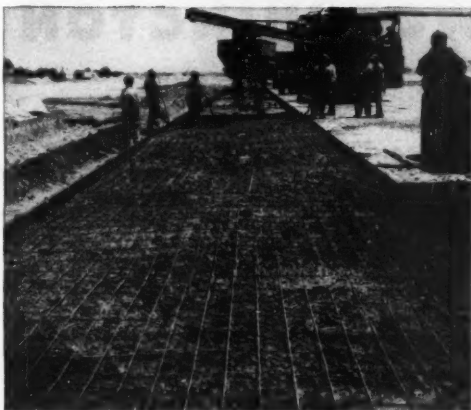
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38-21 12th Street Dept. CM&E Long Island City 1, N. Y.  
See Your Classified Telephone Directory for Nearest Office

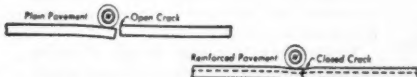
# Saving Lives—Time—Money on



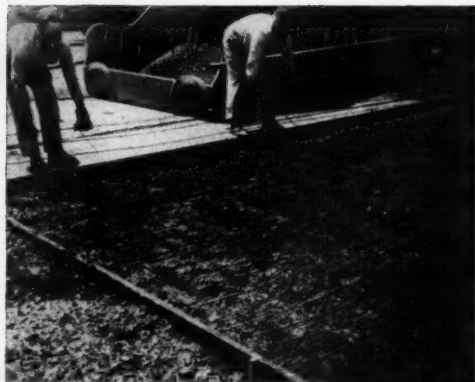
**ON NEW YORK'S WEST SIDE HIGHWAY** American Welded Wire Fabric helps to improve the riding comfort, and Multisafety Cable Guard provides maximum driving safety for the motoring public. American Welded Wire Fabric fortifies the ground slab in all directions, reduces the rate of cracking, prevents progressive damage and insures additional years of trouble-free service. Multisafety Cable Guard provides maximum safety at low maintenance cost.



**LONGER PAVING SLABS**, fewer expansion joints, improve riding qualities on concrete highways reinforced with American Welded Wire Fabric. Reduced rate of cracking, prevention of heaving and spalling also reduce maintenance costs, increase the service life of the highway.



**AS THE WHEEL LOAD** approaches an open crack in plain pavement, one slab end carries the entire load. As the wheel approaches the closed crack in pavement reinforced with American Welded Wire Fabric, both slab ends, instead of one, carry the load, preventing damage to the slab and to the subgrade.



**EASILY PUT IN PLACE**, these big sheets lie flat, stay in place during pouring. The many small, closely-spaced members distribute the strength of high yield strength steel evenly throughout the slab. This fabric reinforcement makes possible longer slabs, fewer joints, hence smoother riding. Ease of handling and higher allowable stresses make for appreciable savings in labor and material costs. Long, economical service from roads in which it has been used is the main reason why American Welded Wire Fabric is the world's most widely-used prefabricated reinforcement for concrete highways.



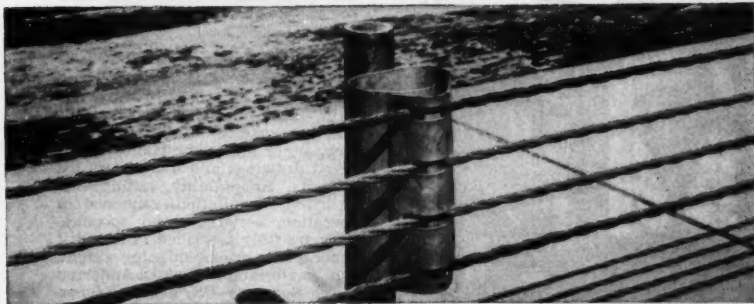
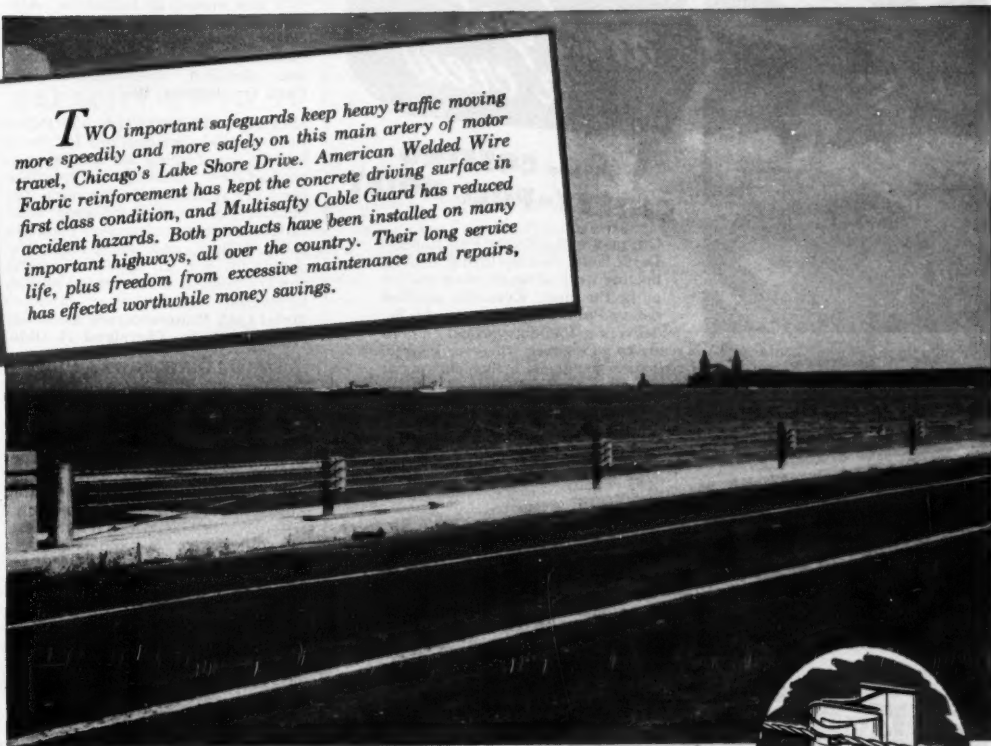
## AMERICAN WELDED WIRE FABRIC —

UNITED STATES STEEL

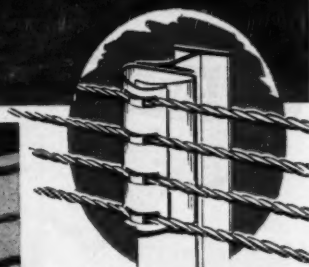


# the Nation's Express Highways

***T**WO important safeguards keep heavy traffic moving more speedily and more safely on this main artery of motor travel, Chicago's Lake Shore Drive. American Welded Wire Fabric reinforcement has kept the concrete driving surface in first class condition, and Multisafety Cable Guard has reduced accident hazards. Both products have been installed on many important highways, all over the country. Their long service life, plus freedom from excessive maintenance and repairs, has effected worthwhile money savings.*



**MULTISAFTY CABLE GUARD** has proved so effective on the nation's network of roads and highways that it has been adopted as a standard material by many state highway commissions. The four galvanized wire cables, attached to a galvanized resilient spring bracket, absorb the impact of collision and side swiping, prevent off-the-road crashes and capsizing of cars at high speeds. In addition to its long life and excellent performance in all climates at all seasons, Multisafety Cable Guard has established records for low installation and maintenance costs.



**THE FOUR GALVANIZED** wire cables of Multisafety Cable Guard possess the tremendous strength needed to withstand terrific impact. The offset spring brackets on which the cables are mounted help to absorb impact stresses and to deflect vehicles which collide with the guard. Posts and anchorages are sufficiently sturdy to withstand the total stresses transmitted by cables and springs. No painting is required, therefore, upkeep costs are low.

## — and MULTISAFTY HIGHWAY GUARD

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**HIRE  
ONE MAN**

*and get  
a crew*

**with a COFFING  
SAFETY-PULL HOIST**

One man with a Safety-Pull Ratchet Lever Hoist does the lifting, pulling, holding work of many — on the job or in the shop. Even the smallest Safety-Pull, weighing only 14 lb., delivers a 1500-lb. vertical or horizontal pull—is ready to go to work wherever hooked.

Raising heavy structural members, lifting, shifting or servicing equipment—these are but a few of the jobs it handles easily, safely.

All Safety-Pulls are tested at 100 percent overload. Dual ratchet and pawl construction cannot slip—holds securely in any position. Choice of nine sizes with capacities up to 30,000 lb. Send for Bulletin D5SP.



Quik-Lift Electric Hoists •  
Hoist-Alts • Mighty-Midget  
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**COFFING HOIST COMPANY**  
Danville, Illinois



**The Most Modern  
Asphalt Plant  
in America**

From California to New Jersey the new Standard Asphalt Plant is being hailed as the acme of modern design—tops for rugged dependability, yet most economical to own and operate.

Unit built, 8 sizes—500 to 6000 pound batch capacities. Manual or fully automatic weighing. Prompt delivery.

Write TODAY for full descriptive catalog.



**STANDARD STEEL CORPORATION**

5089 BOYLE AVE., LOS ANGELES 58 • 123-89 NEWBURY ST., BOSTON 16

**JACKS**—Bulletin 1515 (16 pp) describes the Buda line of ratchet, screw, and hydraulic jacks. These jacks are available in a capacity range of 3 to 75 tons. Feature of the catalog is the table of contents which lists jack models by industries. Also included is a table to help select the correct jack, applications pictures, recommended uses, special features, and detailed specifications.—**The Buda Co., Harvey, Ill.**

**METAL LATH SPECIFICATIONS**—Revised 1950 specifications for metal lathing and furring are available in booklet form. Although the specifications are substantially the same, the booklet has been completely rearranged for easy reference. It covers solid, hollow, and sound-insulating partitions, and all types of ceiling construction. It is illustrated and interspersed with relevant tables.—**Metal Lath Manufacturers Assn., 636 Engineers Bldg., Cleveland 14, Ohio.**

**STUD-WELDING POWER UNITS**—Detailed specifications and performance characteristics of two Nelwelder power units are contained in a 4-p bulletin. One is a small compact unit comparable to two conventional 400-amp generators in parallel for handling studs up to and including 1/2-in. dia. The other is a battery unit with a self-contained automatic charging device. It handles studs to 1/2 in.—**Nelson Stud Welding Div., Morton Gregory Corp., Lorain, Ohio.**

**DIESEL ENGINES**—Construction and operation features of the Type 4FS diesel engines are contained in Bulletin 183. This bulletin illustrates various engine applications and gives kilowatt ratings and pumping capacities of the different models. It also pictures all main engine parts and gives their particular specifications.—**Nordberg Mfg. Co., Chicago & Oklahoma Aves., Milwaukee 7, Wis.**

**NON-RETURN VALVE**—Single-acting valve is described in a 6-p bulletin. Bulletin S-2 describes three different yoke assemblies on the elbow, angle, and globe bodies by detailed drawings and a complete list of parts. Adaptability, testing, construction, installation, sequence of operation, servicing, and specifications are fully described. Tables list general dimensions, shipping weight, and materials.—**Golden-Anderson Valve Specialty Co., 2094A Keenan Bldg., Pittsburgh 22, Pa.**

**CONCRETE CRIBBING**—Illustrated brochure presents case histories of both open- and closed-face cribbing. Drawings show typical wall sections of varying lengths. Engineering specifications and instructions are included, together with several photos of cribbing manufacture and actual installations. Principal advantages are discussed in detail.—**Universal Concrete Pipe Co., 297 S. High St., Columbus, Ohio.**

# MIXERMOBILE MANUFACTURERS completely *Portable* CONCRETE

- WEIGH BATCHING
- MIXING
- ELEVATING **PLANT**

**CAPACITY UP TO 50 CU. YDS. PER HOUR**

## FROM RAW MATERIALS TO POURED CONCRETE

This ruggedly built trio means more jobs covered...reduced labor costs...savings in time and expense of making stationary installations. All functions are performed by one operator on each unit. Completely portable equipment travels at normal highway speeds...setup time for complete operation is 15 minutes or less.



### MIXERMOBILE WEIGH BATCHER • Model WB-1

Completely portable unit weigh batches aggregate on the job. Can be charged with front end loader from storage piles or directly from dump trucks. Single operator sets up unit for operation in 15 minutes. Weigh batches up to 50 cu. yds. per hour.

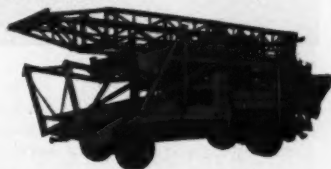
- Three 7 cu. yd. bins and 2 cu. yd. skip store up to 23 cu. yds. of aggregate.
- Equipped with either dial or beam scales.
- Charging skip hydraulically operated.
- Weight, 17,800 lbs.; height, 12 ft.; width, 8 ft.; overall length, 28 ft. (with skip down).
- Bin selector located by skip control directs skip.
- Mounted all around on 8.25x20 tires.



### 2-YD. MIXERMOBILE • Model M-7

Completely mobile concrete mixing and elevating plant eliminates cost of hauling and erecting expensive equipment. One man handles the entire operation from mixer to deck.

- Improved batch-timer and counter insures positive mixing time.
- New electronic water meter gives unerring accuracy.
- Sturdy planetary drive hoist clutches give extra power, durability.
- Mixes up to 50 cu. yds. per hour.



**SCOOPMOBILE • Model C.** The versatile Scoopmobile with exclusive planetary drive has 7 "quick change" attachments. Standard  $\frac{3}{4}$ -cu. yd. scoop bucket permits operator to keep Weigh Batcher unit performing to full capacity.

- Loads and transports aggregate.
- Transports, elevates and pours concrete.
- Lifts and places form panels, timbers, etc., up to 4,000 lbs. capacity.

**ATTACHMENTS INCLUDE:** Scoop buckets in various sizes, swivel and standard type concrete hoppers in  $\frac{1}{4}$  cu. yd. capacities, lift forks, crane boom, track extensions with braces up to 26 feet overall.



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**LAMINATED LUMBER SPEX**—“Standard Specifications for the Design and Fabrication of Structural Glued Laminated Lumber” is available in booklet (8 pp) form. Basis for the specifications is data developed by research of the Forest Products Laboratory, U. S. Dept. of Agriculture.—**West Coast Lumbermen's Assn.**, 1410 S. W. Morrison St., Portland 5, Ore.

**ZONOLITE INSULATIONS**—Illustrated booklet (12 pp) explains the proper application of all forms of Zonolite vermiculite. Design data, methods, and specifications outlined are results of laboratory research and field tests. The booklet describes

installation methods of insulation fill, plaster aggregate, plaster finish aggregate, acoustical plastic, concrete aggregate, and insulating plastic.—**Zonolite Co.**, 135 S. LaSalle St., Chicago 3, Ill.

**SPACE HEATERS**—Bulletin 526 describes Counterflo direct-fired space heaters in a range of gas or oil-fired models with outputs from 400,000 to 2,000,000 btu's per hr. Featured is a comparison chart to indicate that steel requirements for these installations have been reduced as much as 50 to 70%.—**Dravo Corp.**, Heating Dept., 5th & Liberty Ave., Pittsburgh 22, Pa.

**GENERAL - PURPOSE PUMPS**—Comprehensive catalog covers a broad line of horizontal Fluidyne general-purpose pumps. They afford a capacity range from 10 to 5,500 gpm. Liquids can be pumped against heads up to 260 ft. Two types are listed in Bulletin B-2300—closed-coupled electric-motor driven; and a bracket-mounted pump for driving through a flexible coupling, V-belt, or flat-belt pulley.—**Peerless Pump Div.**, Food Machinery Corp., 301 West Ave. 26, Los Angeles 31, Calif.

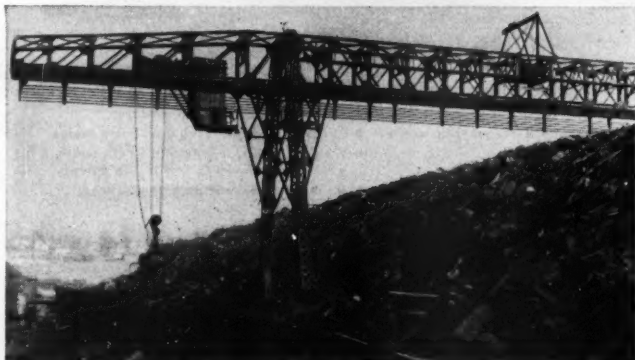
**RADIAL-ARM SAWS**—Woodworking ideas for contractors are illustrated and described in this 12-p catalog. The center spread illustrates some of the 125 different operations that can be performed with radial-arm saws. Catalog M-50 features a description of the various Delta saws and accessories.—**Rockwell Mfg. Co.**, Delta Power Tool Div., 600 E. Vienna Ave., Milwaukee 1, Wis.

**SANITARY LANDFILL**—Informative descriptions of this type of refuse and garbage disposal are presented in a 16-p booklet entitled, “A Look to the Future With Sanitary Landfill.” Booklet discusses various aspects of the problem, and shows how a typical community met them. Booklet is designed to serve as a guide to proper site selections, choice of the right equipment to do the job, and the actual operation of sanitary fills. Booklet features comic-book treatment.—**Caterpillar Tractor Co.**, Peoria 8, Ill.

**INSULATED BUSHINGS**—Metallic conduit bushings designed to provide protection from abrasion of cable insulation and accidental grounds are described in a 1-p bulletin. Bushings require no inside locknuts and are light weight. Other features and specification data are listed.—**Buchanan Electrical Products Corp.**, 1290 Central Ave., Hillside, N. J.

**PORTABLE CONVEYORS**—Four conveyors especially designed for construction work are featured in Bulletin 450. They are: The all-aluminum one-man-operated utility conveyor; the lightweight troughed belt conveyor; the heavy-duty troughed belt conveyor and the power-moved troughed-belt conveyor.—**The Fairfield Engineering Co.**, Marion, Ohio.

**PORTABLE COMPRESSOR**—Large-size rotary-type compressor is described in detail in Bulletin 2310. It features a description of how high capacity (600 actual cfm free air at 100 psi) is obtained while keeping weight to a minimum (9,500 lb). The bulletin describes the construction of the Mobil-Air 600 Gyro-Flow; contains photographs of typical applications; lists principal advantages said to accrue through its use; and describes other I-R features.—**Ingersoll-Rand Co.**, 11 Broadway, New York 4, N. Y.



America's industrial and military strength lies in this scrap yard — and thousands just like it, throughout this great country of ours.

You can contribute to this might by seeing to it that all idle scrap in your possession gets back to the mills—where it can produce tools, machines . . . as well as tanks, guns and shells to protect our future security.

Steel is the backbone of production. By “getting in the scrap” now to make steel, you can add to America's strength.



**LACLEDE STEEL COMPANY**

St. Louis, Mo.





**SHOVEL**

## **PAYLOADERS ON RUBBER**

*Get the Job Done FAST . . . .*

This big 1½ yd. HM PAYLOADER with its combination of large pneumatic tires and 4-wheel drive gives you fast-action traction on all kinds of footing — on sand, stone, snow, clay or mud. It gives you crawler-like traction at far less maintenance expense, PLUS speed when you want it and the ability to work on pavements and to travel over streets and highways at 16 m.p.h.

This PAYLOADER also gives you easy opera-

tion and maneuvering speed with its power-booster steering and full-reversing transmission having four speeds in reverse as well as forward. Once you see the Model HM in action you'll know why hundreds of contractors are its enthusiastic owners and boosters. Full information on this 1½ cu. yd. model and other size PAYLOADERS is yours for the asking. The Frank G. Hough Co., 000 Sunnyside Avenue, Libertyville, Illinois.



**PAYLOADER**

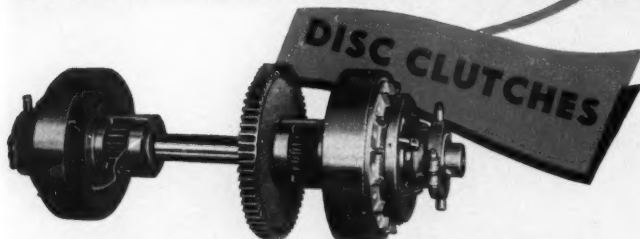
THE FRANK G. HOUGH CO. . . SINCE 1920



**BULLDOZER**



# 1 of 10 Reasons Why UNIT is a Better Machine



All operating clutches on UNIT Cranes and Shovels are disc-type and completely interchangeable — a very desirable feature when replacements are necessary. Engaging pressure is uniformly distributed over the entire frictional surface. Engaging surfaces are flat and polished for greater endurance, longer life, and better performance. Loads are picked up smoothly and evenly, without any tendency to grab or self-energize. Clutches are mounted on the high-speed countershafts, instead of directly to the drum shafts. This feature lends itself to a more compact design, smoother operation, maximum power, and greater accessibility for making adjustments or repairs. This method of clutch installation is another example of the superior design that is a part of every UNIT crane or excavator.

## UNIT 1014 Truck Crane

The newly designed Unit 1014 Truck Crane is packed with quality and ready to prove it. Perfectly balanced, it has modern hook-roller construction. A separate engine powers the upper structure, and can be either gasoline or Diesel. The truck engine supplies power in a straight-line, through drive to the tandem rear axles.



6th of a series of ten ads describing outstanding UNIT features.

UNIT CRANE & SHovel CORP., 6305 W. Burnham St., Milwaukee 14, Wis., U.S.A.

Crawler and Mobile models — 1/2 and 3/4 Yd. Excavators. Cranes up to 20 tons capacity.



SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHERS • MAGNETS

## Built for the LONG HAUL!

### the RUGGED MILLER

**MODEL "B" Tilt-Top**  
Designed for heavy duty — this tough Tilt-Top provides easy handling of loads up to 10 tons. The all steel frame has tapered side channels 12" deep, braced with 8" deep X member. The Miller straight through axle is integral with the frame and features 3 1/2" dia. solid steel, stub inserts. Standard platform is 14' x 8', optional 16' available. Platform, tires, Timken bearings, pinion and dual Budd wheels are all standard equipment.



**IMMEDIATE DELIVERY \$1175**  
The following equipment is optional and extra. Hydraulic tilt control, two speed winch, electric brakes.

MILLER RESEARCH ENGINEERS

DEPT. C-5, 725 W. BURNHAM ST.  
MILWAUKEE 4, WIS.

**SPARK PLUGS**—Complete line of automatic spark plugs is described in this catalog. Lists principal features claimed for the BG plugs; tells how to install them properly; and describes how to keep them operating efficiently. Replacement data and proper gap settings are supplied for all major equipment.—**The BG Corp.**, 136 W. 52nd St., New York 19, N. Y.

**LIQUID WETTING AGENT**—Procedures for using liquid wetting agents in the manufacture of concrete blocks are listed in a bulletin describing Monsanto's Santomerse S. Advantages listed in the catalog include: Denser, stronger, and more uniform concrete products; improved plasticity; lighter color; cleaner equipment; and better dispersion of cement.—**Monsanto Chemical Co.**, St. Louis 4, Mo.

## SOIL-TESTING EQUIPMENT

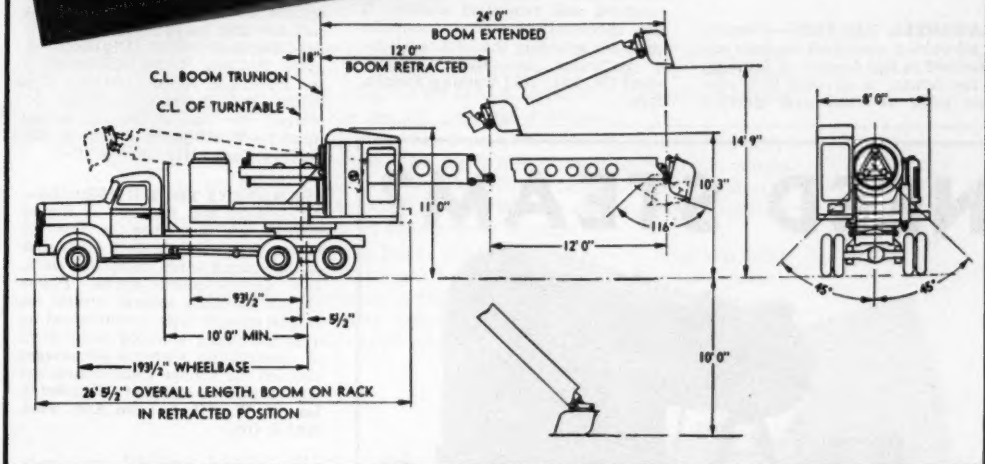
— Twelve-page Catalog 3-51 describes a complete line of soil-testing apparatus. Included are: tri-axial and consolidation apparatus and accessories, paraffin warmers, dispersion mixers, direct shear apparatus, laboratory and field California bearing ratio apparatus, humidifiers, humid boxes, the Terzaghi water level for differential settlement observations, classification sets, a portable indicating pyrometric controller, the Harvard miniature compaction apparatus, and laboratory timers.—**Soil Testing Services, Inc.**, 4520 W. North Ave., Chicago 39, Ill.

**WELDING MANUAL**—Technical handbook (44 pp) covers latest developments in welding materials and techniques. "The Manual of Welding Engineering and Design" contains data on characteristics, properties, applications and operational procedures for Eutectic alloys and fluxes. Information is presented in compact, handy form on all phases of welding.—**Eutectic Welding Alloys Corp.**, 40 Worth St., New York 13, N. Y.

**AUTOMATIC RESPIRATOR**—Bulletin CH-2 (4pp) describes the M-SA Pneolator—an instrument that makes possible automatic artificial respiration without suction. The bulletin explains the operation of the Pneolator in detail, and tells how it serves as an inhalator after voluntary breathing starts.—**Mine Safety Appliances Co.**, Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.

**FLEXIBLE COUPLINGS**—Engineering information for proper applications of RC roller-chain flexible-shaft couplings is listed in 4-p Folder 2363. Data listed cover dimensions, weights, service factors, and horsepower ratings. Detailed data are also given on two types of protective grease retaining casings.—**Link-Belt Co.**, 307 N. Michigan Ave., Chicago 1, Ill.

We've given  
this diagram a name...



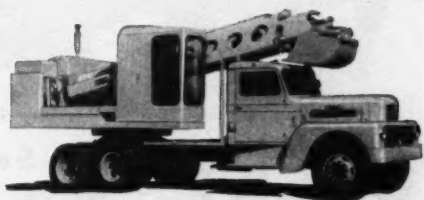
## "SIMPLICITY"!

**T**HIS IS THE ONE WORD that really describes the Multi-Purpose Gradall Construction Machine. The Gradall handles more types of construction work—more simply—than any other machine on the market! Whether it's trenching, excavating, ditching, grading, or pavement removal, the Gradall handles the job speedily and with such accuracy that much costly hand labor is eliminated.

One of the big reasons for this unusual simplicity of operation lies in the Gradall's *hydraulic design*. You get the full advantages of hydraulic power in the all-welded boom, rather than having it dissipated through mechanical transmission, as in ordinary construction machines.

But ask for a demonstration to see for yourself. You can arrange this with your Gradall Distributor.

**Gradall Distributors in over 60 principal cities in the United States and Canada**



**GRADALL  
MULTI-PURPOSE  
CONSTRUCTION MACHINE  
with HYDRAULIC DESIGN**



DIVISION OF

**WARNER  
&  
SWASEY**  
Cleveland

**GRADALL—THE MULTI-PURPOSE CONSTRUCTION MACHINE**

**BRUSHES**—Catalog 210 contains 76 pp. of photographs and descriptions of a complete line of power, paint, varnish, and maintenance brushes. Catalog describes the various materials used in producing brushes, tells how to select the proper brush for specific jobs, and shows the various brushes in use, illustrating recommended applications.—**The Osborn Manufacturing Co., 5401 Hamilton Ave., Cleveland 14, Ohio.**

**CLAMSHELL BUCKETS**—Features of all-welded clamshell buckets are described in this 8-pager. A full page in the catalog is devoted to a complete table of condensed specifica-

tions listing capacity, weight, dimensions, and sheave and cable data for each size ( $\frac{3}{8}$  to  $2\frac{1}{2}$  yd.) and type of bucket. Action photographs show the buckets in use.—**C. S. Johnson Co., Subs. of Koehring Co., Champaign, Ill.**

**MATERIALS-HANDLING EQUIPMENT**—Meco equipment listed in this catalog includes: Hand trucks, platform trucks, barrel trucks, skids, dollies, and a complete line of rubber-tired and semi-steel wheels. It lists specifications and recommendations for selecting the best truck for a particular job.—**Modern Equipment Co., Inc., 2011 Cumming, Omaha, Neb.**

**SOLVENT CLEANING COMPOUND**—Booklet describes machinery cleaning, rust-inhibiting, and removal of rust-preventive coatings. It features a 2-p leaflet on general applications of Actusol, an emulsifiable solvent-cleaning compound.—**The DuBois Co., 1120 W. Front, Cincinnati 3, Ohio.**

**WORTHINGTON BULLETINS**—Four catalogs are announced by Worthington. Bulletin W-212-B6 describes the Type CM precipitating softener and coagulator. Bulletin S-500-B52A describes the DR Diesel engines. Bulletin H-1200-B42 describes the WJ-45 and WJ-55 hand-held rock drills. And Bulletin R-1700-B5 describes the 35s dual-drum tunnel mixers.—**Worthington Pump & Machinery Corp., Harrison, N. J.**

**PERMANENT TIMBER BRIDGES**—Advantages and features of timber bridges are described in this 6-p folder. These include deck arch, girder, bowstring truss, composite deck, and parallel-chord types. Photographs illustrate several typical examples of each type, accompanied by a line drawing showing basic form of construction. General advantages claimed for timber construction are also included.—**Timber Structures, Inc., N. W. 29th & Yeon Ave., Portland 8, Ore.**

**PAYROLL MACHINES**—Three folders describe how to solve payroll problems by use of machine-accounting procedures. Folder AB-525 entitled "One Fast Line of Writing Completes Your Paycheck and All Your Pay Records" describes timely short-cuts in payroll methods. Folders AB-446 and AB-447 provide supplementary information on the subject of payrolls.—**Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.**

**PULLERS AND JACKS**—Labor-saving applications of hydraulic pullers and jacks are discussed in this 8-pager. Bulletin features a description of how these units simplify rigging requirements and improve safety in numerous pulling, pushing, and lifting operations. Complete specifications of Re-Mo-Trol units and other Simplex equipment are included.—**Templeton, Kenly & Co., 1008 S. Central Ave., Chicago 44, Ill.**

**PRESTRESSED CONCRETE PIPE**—Folder features a description of the construction of prestressed concrete steel-cylinder pipe. Special emphasis is placed on an explanation of how the steel cylinder and concrete core are prestressed to form an elastic structure. Photographs show steps in the manufacturing of the pipe. Also listed is a series of advantages claimed for this type of construction.—**Price Bros. Co., 1932 E. Monument Ave., Dayton 1, Ohio.**

## NEED STEAM?



LUCEY 104 H.P. 150 and 250 lb. W.P.  
Skid mounted with 24" oil burning base.

## LUCEY Inside Seal-Weld Double Calked BOILERS

1. 1040 sq. ft. heating surface.
2. 160 cu. ft. furnace volume.
3. Ample steam volume 54 cubic feet.
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• FLY ASH REMOVAL UNITS

ASME UNFIRED PRESSURE VESSELS



# Macks ARE Masters OF THE TOUGHEST TERRAIN

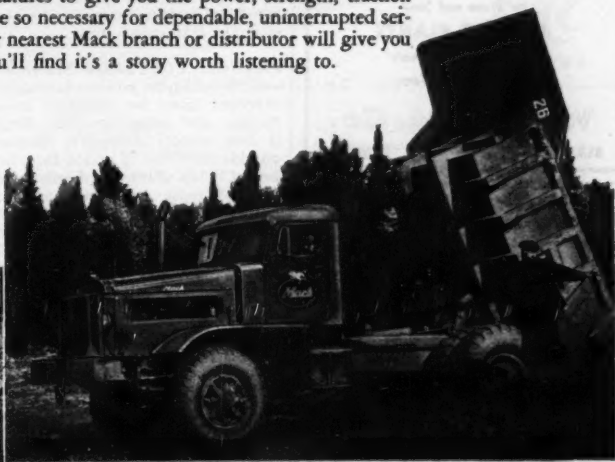
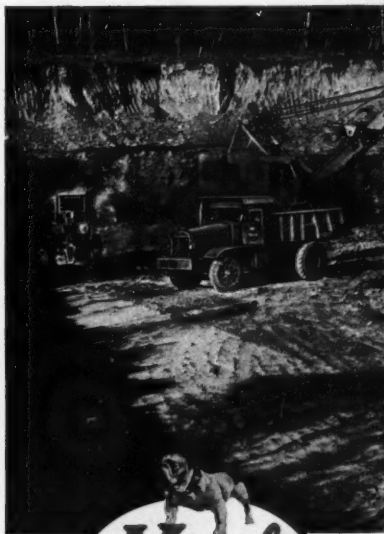


No matter how tough the going...under the worst of weather conditions...through slippery mire or shifting sand...or over rutted, uneven ground — big SUPER MACK trucks keep the payloads moving on time...at less cost and with less absenteeism.

One big reason why Mack trucks lick the toughest terrain is the exclusive Mack Power Divider. Where unequal tractive requirements are encountered, the Power Divider differential distributes torque to favor the driving wheel having the most traction, thus eliminating power dissipation in useless wheel slippage.

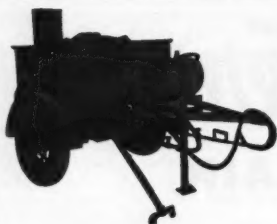
Mack's exclusive Power Divider combines with numerous other outstanding Mack features to give you the power, strength, traction and easy maintenance so necessary for dependable, uninterrupted service on the job. Your nearest Mack branch or distributor will give you complete details. You'll find it's a story worth listening to.

Whether in stripping or excavating, Model LR SUPER MACK trucks keep the loads moving — fast.



...outlast them all

Mack Trucks, Empire State Bldg., New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.



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For Industrial Tractors

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for Stone and Sand

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Portable — Stationary

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"UNTOLD

*Savings*  
IN money"

By the use of

## ATLAS SPEED FORMS

"We have been able to effect substantial savings in the time . . . to set up . . . and . . . tear down, which means untold savings in money."

HOWARD C. GRUBB,  
Building Contractor  
Tulsa, Oklahoma

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**CENTRIFUGAL PUMPS**—Latest developments in a line of single-stage split-case centrifugal pumps are covered in Bulletin 5004-A. All pumps listed are available for direct-connection to electric motors, steam turbine, gasoline engines, or belt drive. A performance table simplifies selection of individual units to meet specific requirements for capacity and head. Capacities range from 25 to 4,000 gpm, with total heads from 20 to 300 ft. Color illustrations show important elements of construction. Detailed specifications and dimension tables complete the pump data.—The Deming Co., Salem, Ohio.

**WRECKING TOOL**—Folder (4 pp) describes the Ripper Jack—a wrecking tool for dismantling wood structures with minimum damage to the lumber. The tool, a combination crowbar, pry rod, nail puller, and sledge, is described in detail. Illustrations show the various positions in which the tool can be used, and text describes its principal features of construction and operation.—Calumet Steel Castings Corp., 1636a Summer St., Hammond, Ind.

**FLANGE, COUPLING SELECTOR**—Slide-rule-type selector contains all relevant facts for selecting proper flanges and couplings. For flanges, it lists outside diameter, thickness, outside diameter of raised face, number of holes, diameter of holes, diameter of bolts, and bolt circle for Series 15 and 30 flanges. For couplings, it lists average sizes of standard, extra heavy, 3,000- and 6,000-lb coupling. A pipe standard table is incorporated in the selector. It shows nominal wall thicknesses for Schedules 10 to 160, and nominal thicknesses and weights for standard, extra heavy, and double-heavy pipe.—Nooter Corp., 1400 S. 2nd St., St. Louis 4, Mo.

**ARCHITECTURAL PLYWOOD**—Manual describes 3/4-in. Weldwood plywood. It contains valuable reference information on types, characteristics, and uses of this material. Data are provided on how to make corners, joints, curved panels, and counterfront layouts. Charts list availability, origin, and length range of 36 veneers.—United States Plywood Corp., 55 W. 44th St., New York 18, N. Y.

**AIR-LINE FILTERS**—Bulletin describes, illustrates, and lists applications and specifications for pipe-line filters for air and other gases. This 8-page features a description of the Stawey double-action principle which provides both mechanical separation and filtration. Installation views are shown for the Series 600 filters (for pressures to 6,000 psi); for vacuum and absorption types and special models for removal of carbon black and aluminum oxide.—Dollinger Corp., 11 Centre Park, Rochester 3, N. Y.

## HOUSE CONSTRUCTION COSTS

1. Shows you how to determine unit costs of house construction—applying to all designs and local price variations. Tells how to determine costs for every building operation; includes data on quantity of material and number of labor hours needed; gives examples of typical unit costs. By G. Underwood. 382 pages, 63 illus., \$4.75

## THE BUSINESS OF HOME BUILDING

2. Explains business methods that make home building more profitable. Gives you "know-how" needed to make a profit with minimum risk to your money . . . a practical understanding of economic factors that determine the market for your product . . . the benefit of production knowledge based on the experience of other builders. By Kenneth B. Johnstone, Carnegie Institute of Technology, and Charles Joren, Wm. Joren and Sons, 285 pages, \$4.00

## LEGAL PHASES OF CONSTRUCTION CONTRACTS

3. Discusses 46 different legal problems that arise in construction contracts, showing engineers, architects, contractors, and attorneys the attitude courts have taken toward their problems. Provides cases which are typical of all important legal problems involving construction contracts—giving you a compact manual that can help you avoid the legal pitfalls in your work. Shows actual language of contract provisions . . . quotations from courts' decisions . . . material facts on each case, etc. By Vernon Werbin, Member, New York Bar. 267 pages, \$2.50

## HANDBOOK OF RIGGING

4. Condensed into this book are the tips, methods and techniques essential to more effective rigging practices in industrial and construction operations. Deals with everyday maintenance operations—with the transportation and handling of heavy machinery—with the erection and demolition of smaller size structures. By W. E. Rosenthal, City Engineer, Consolidated Edison Co., 321 pages, over 300 illus., \$4.75



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*Heavy-Duty Trailers*  
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**Parmanco**  
HI-SPEED HORIZONTAL  
**D R I L L S**

New Traction Drive with Forward and Reverse



**THIS UNIT IS  
DELIVERING  
6-inch shot-holes  
READY FOR LOADING**

**at better than  
TWO FEET A MINUTE!!**

The new Parmanco Hi-Speed Horizontal Drill is completely redesigned around a 40 h. p. engine with four drilling speeds which, in field tests, has cut one-third off the footage drilling time — a cost-per-drilling-foot saving that we are passing on to the strip mine operator and contractor at no increase in our price. In addition, the drill is equipped with a starter and generator, dual type front wheels, truck type rear axle with mechanical brakes and a traction drive with both forward and reverse.

• For both Mines and Construction

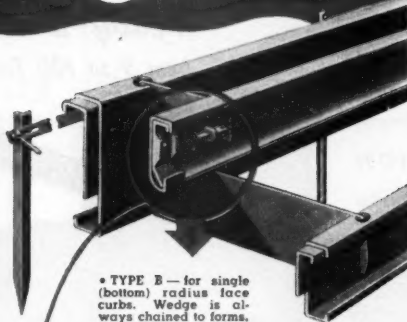
**PARIS MANUFACTURING COMPANY • PARIS, ILLINOIS**

**Heltzel**  
BUILDS IT BETTER

## CURB & GUTTER FORMS

HAVE **3** INTERCHANGEABLE  
FACE FORMS

Heltzel steel forms augmented by various improvements through the years are the most rigid, advanced equipment obtainable. Your consideration of the many varied applications of these steel forms is respectfully invited. Write for Bulletin L-20.



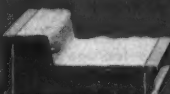
• TYPE B — for single (bottom) radius face curbs. Wedge is always chained to forms.

• TYPE A — for straight face curbs (no radii). Slide lock is rigid, positive.

• TYPE C — for double radius (S-shape) face curbs. Sliding dowels secure upper and lower extremities.



## ...and **3 Optional** FACE CURB FORM SUPPORTS



• Full depth curb and gutter division plate—provides maximum steel strength.



• Revised division plate—provides built-in support with maximum strength.



• Universal support—provides excellent support, plus ample space.

# HELTZEL

STEEL FORM & IRON CO.  
WARREN, OHIO

## SALES AND PARTS SERVICE

A department devoted to manufacturers' activities involving the sale and distribution of products and parts, and service facilities. Designed to give the reader information that will enable him more readily to purchase products and parts and to service his equipment.

### Sales Personnel

**Quaker Rubber Co., Inc.:** J. R. Lewis is assistant general sales manager of the Quaker Rubber Corp. division of Porter.

**The Youngstown Sheet & Tube Co.:** Paul B. Baird is manager of standard pipe sales. Carl T. Selander is assistant manager of standard pipe sales with headquarters in Chicago.

**Zonolite Co.:** Arthur H. Schneider is sales and service representative in a 27-county area in western Pennsylvania. Other appointments include: Emrys L. Williams, Cuyahoga Falls, Ohio; H. C. Fidler, who serves northeast Ohio; William Blaisdell, Lima, for northwestern Ohio; Robertson L. Clark, Morrow, for southwestern Ohio; and Ronald F. McCormick Coshocton, southeastern Ohio.

**Dravo Corp.:** Morris L. Hicks is manager of the Philadelphia district office.

**Atlas Powder Co.:** Paul T. Evans is appointed assistant to the director of sales. James L. Wetzel succeeds him as manager of Pittsburgh district sales.

**Fruehauf Trailer Co.:** Announces appointment of 10 managers for sales and service branches. They are: Edward G. Mosher, Pittsburgh, Pa.; H. J. Gilsdorf, South Kearny, N. J.; Harry C. Rice, Charlotte, N. C.; Walter R. Pavela, Sacramento, Calif.; Walter P. Quinn, Salt Lake City, Utah; F. K. Bliss, Boston, Mass.; L. G. Crayton, Phoenix, Ariz.; Amos H. Kirksey, Oakland, Calif.; S. K. Porter, Los Angeles, Calif.; and Marvin G. Holm, Spokane, Wash.

**DeWalt Inc.:** Walter H. Roising is district sales manager for certain areas of New York, New Jersey, and Connecticut.

**General Electric Co.:** G. P. Foster is district representative of 2-way communications equipment in Kansas and portions of Missouri and Nebraska. His headquarters are in Kansas City, Mo.

**The Celotex Corp.:** C. P. "Phil" Lingle is manager of the Denver sales branch. Paul G. R. Armstrong is assistant manager of the Cleveland, Ohio, branch.



**Caterpillar Tractor Co.:** E. C. Sonnenman is assistant export divisional manager of the Latin American division.

**Blood Bros. Machine Co.:** William R. Sturgis is transferred to the sales department to cover the southwest territory.

**Coast Equipment Co.:** Jack Fingland is added to the Bay Area field sales staff. Frank N. Dyer is added to the San Francisco office sales staff.

**Brainard Steel Co.:** This subsidiary of Sharon Steel Corp. has appointed Richard K. McCreery as general sales manager.

**Hyster Co.:** Richard E. Stiegele is sales manager, eastern tractor equipment sales division, with offices in Peoria, Ill.

**Libbey-Owens-Ford Glass Co.:** Clinton F. Hegg is sales manager of the Fiber Glass division.

**Masonite Corp.:** Paul B. Shoemaker is vice-president in charge of sales.

**Raybestos-Manhattan, Inc.:** Manhattan Rubber Div. announces two changes: Kenneth A. Tamms joins its staff as sales engineer in Wisconsin for the abrasive and diamond wheel department; and P. H. Hagen, Seattle, joins the west coast sales

## MEDIUM CAPACITY Hot Mix Asphalt Plant



**Capacity 30-35 Tons Per Hour ...  
Ideally Adapted for Medium Size Cities**

H & B Model CH plants are ideally adapted for the use of medium size cities in their resurfacing and new construction work. Recent municipal purchasers of this type of plants include:

Kalamazoo, Mich.  
Port Huron, Mich.  
Escanaba, Mich.  
Little Rock, Ark.  
Boulder, Colo.

H & B Model CH portable asphalt plants are economical both in first cost and in operation. They are designed to produce the highest type of mixes with a minimum investment.

These medium capacity plants deliver uniformly efficient production for either maintenance work or small paving jobs. The illustration is of a CH-12 plant, with a capacity of 30 to 35 tons per hour. CH-9 plants have a capacity of 15 to 25 tons per hour.

CH plants may be operated with either gasoline, Diesel or electric power. Aggregate feeder, dust collector for dryer, and screen are available as optional equipment.

Specifications and complete information will be sent on request. Write for Bulletin MC-49.



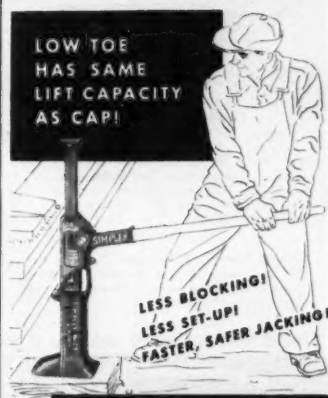
**HETHERINGTON & BERNER INC.**

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# GET 19" LIFT from 2½" CLEARANCE!



## SIMPLEX

RATCHET LOWERING  
JACKS

Lift or Lower the Load  
Notch by Notch—  
cannot be Tripped.

With Simplex Ratchet Lowering Jacks minimum toe clearance is necessary. Loads are usually lifted from the ground to the toe of the jack by pinch bars or wedges. Only Simplex Jacks provide equal lift capacity on toe or cap. No other jacks offer such a combination of low cost and all-purpose utility. In fast jacking action—extra-safety features—and rugged strength for longer life, Simplex Ratchet Lowering Jacks give you more for your money! Available in capacities of 1½ to 35 tons. Write today for Bulletin: Industrial 49.

**SAFETY SUGGESTION**—Use thin wood block—Don't lift or lower steel against steel.



**TEMPLETON, KENLY & CO.**  
1008 South Central Avenue • Chicago 44, Illinois

# Am I Glad We Have STERLINGS!



(Above) Model D31½S Maximum Capacity 3½ cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.

At a time when wheelbarrows are scarce, it certainly feels good to have a supply of sturdy Sterling Barrows on hand. Sterlings are so ruggedly constructed, they seem to last forever. In the present emergency, many Sterlings are working overtime, taking hard punishment and coming back for more . . . again proving . . .  
**IT PAYS TO BUY THE BEST.**



(Right) Model C5W Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

## Sterling

WHEELBARROWS



Look for this Mark of  
STERLING Quality

Side or End Discharge. 11S two or four wheeler. 16S four wheeler.

Timken bearings throughout.

Machined drum tracks, heavy-duty drum rollers mean better performance—longer life. Abrasion-resistant alloy discharge chute liners.

All steel cut sprockets and roller chain drive.

Renewable drum liners.

Silent transmission.

**2 & 3 BAGGERS**

*Better Quality*  
**AT**  
**LOWER COST**

**CONSTRUCTION MACHINERY CO'S. WATERLOO, IA.**

division to handle mechanical rubber products and R/M packings in the Pacific Northwest.

**The Timken Roller Bearing Co.:** Paul Reeves is director of sales.

## Parts and Repair Service

**Cummins Engine Co., Inc.:** Charles C. Sons is acting eastern service manager with headquarters in Columbus, Ind. He replaces Dillard B. Davis named regional service representative in the central region with headquarters in Chicago.

## Distributor Appointments

**Transitier Truck Co.:** W. T. Billard, Inc., 734 E. 3rd St., Los Angeles, is distributor in the southern California area.

**Joy Mfg. Co.:** Interstate Equipment Co., Statesville, N. C., is exclusive distributor of Joy construction equipment for North Carolina.

**Huber Mfg. Co.:** Massachusetts and Rhode Island territory is serviced by E. W. Systrom Co. of Watertown, Mass. Western Machinery & Engine Co. will be distributors in eastern Missouri and central and southern Illinois. Western's offices are at 5075 Manchester Ave in St. Louis, and 125 E. McCord St. in Centralia, Ill.

**Nordberg Mfg. Co.:** Yaun Equipment Co., 2120 N. 3rd St., Baton Rouge, La., is distributor for the 4FS diesel engines in the southern half of Louisiana. E. M. Wakeman & Associates, Lakeland, Fla., will handle this engine in Florida and the gulf counties of Mobile and Baldwin in Alabama.

**Chain Belt Co.:** Machinery, Inc., Charleston, W. Va., is exclusive distributor of Rex construction machinery in the Charleston area. Illinois Road & Equipment Co., Springfield, will handle Rex equipment in the Illinois counties of Adams, Pike, Schuyler, Brown, Scott, Green, Morgan, Macoupin, Mason, Menard, Sangamon, Montgomery, Christian, Logan, DeWitt, Machon, Shelby, Moultries, Coles, Cumberland, Clark, Cass, and Piatt.

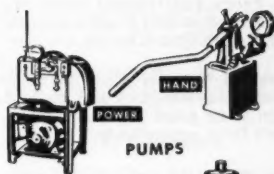
**Rosco Mfg. Co.:** Square Deal Machinery & Supply Co., Orlando, Fla., will handle the complete Rosco line of road machinery.

## Ownership Changes

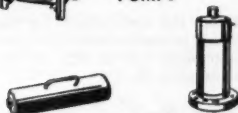
**United Concrete Pipe Corp.:** Acquisition of all common stock of this corporation is announced by United States Pipe & Foundry Co. of Burlington, N. J.

## New Plants and Offices

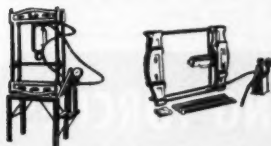
**York Engineering & Construction Co.:** New offices are at 951 Penn Ave.



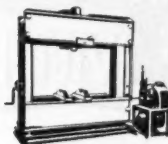
PUMPS



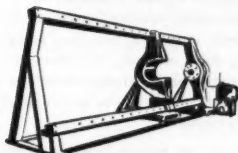
CYLINDERS



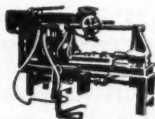
UNIVERSAL PRESS



SHOP PRESS



FORCING PRESS



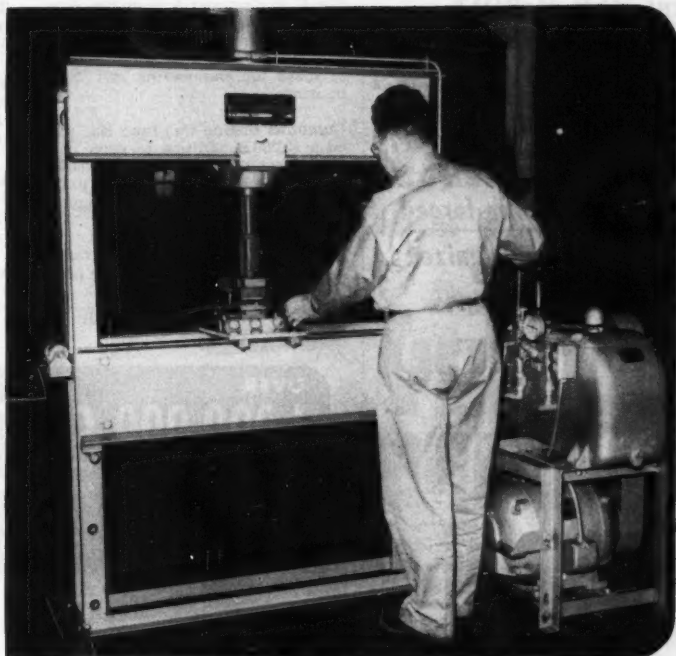
TRACK PRESS



PINION PULLER



JACKING UNIT



Above is a standard Rodgers 60 ton Shop Press with a Rodgers Power Pump. Other models have capacities of 80, 100, 150, 200, 300 and 400 tons.

**HERE'S**

**Rodgers Hydraulic**

**POWER**

**...to do 101 jobs  
faster, better, easier**

You'll find a Rodgers Shop Press is the finest all-around time-and-labor-saving equipment you can have in your plant... for a multitude of pressing, forming, bending, straightening jobs... for die tryout... and even short production runs.

Their many exclusive features make Rodgers Shop Presses unusually versatile in performance... and there are several standard models and capacities to suit most every shop or plant requirement.

Other Rodgers Hydraulic Equipment is available too, for your special jobs.

**SEND FOR CATALOGS**

Complete details of Rodgers Equipment are covered in available catalogs. Write for them.



**Rodgers Hydraulic, Inc.**

7403 WALKER ST., ST. LOUIS PARK, MINNEAPOLIS, MINN.

**HYDRAULIC POWER EQUIPMENT**

## THE RED U-BOLT TELLS YOU



- ① They're drop-forged
- ② Hot dip galvanized
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# CROSBY CLIPS



- ④ They're America's largest-selling **DROP-FORGED** WIRE ROPE FASTENERS DISTRIBUTORS EVERYWHERE

**AMERICAN HOIST & DERRICK CO.**  
ST. PAUL 1, MINNESOTA

## Got a wet job?

Our WELLPOINT SYSTEMS have dried thousands of them quicker... at lower cost! ...Our engineers will be glad to estimate your wet job!

Call  
**COLLECT**



**GRIFFIN**  
WELLPOINT CORPORATION

881 EAST 141st ST., NEW YORK 54, N. Y.

Please send Engineer to estimate our dewatering requirements.

Name.....  
Firm.....  
Address.....

\*Phone nearest office: NEW YORK, ME 8-5634; HAMMOND, IND., SH 6-1602; JACKSONVILLE, FLA., JA 3-4516

The F. D. Cummer & Sons Co.: General offices are located at 1827 E. 18th St., Cleveland 14, Ohio. Space has been quadrupled to provide additional space for engineering and warehousing.

Cummins Engine Co., Inc.: Has added a 92,000-ft addition to serve as a stores center building. A 9,600-ft addition to the DD fuel pump building will increase the size of the plant by 30%.

Reynolds Metals Co.: Contract for an \$80,000,000 aluminum reduction plant is awarded to Henry C. Beck Co., Dallas, and H. R. Henderson & Co., Marshall, Tex.

The Purdy Co.: General offices are now located at 8754 Dobson Ave. (at 1000 E. 87th St.), Chicago.

Cleveland Vibrator Co.: Has completed a concrete-block and steel addition to its plant. This is the company's third expansion in 5 yr.

Reed Roller Bit Co.: Offices of the Philadelphia branch of the Cleco and Dallett divisions are at 5220 N. 5th St., Philadelphia 20, Pa.

Worthington Pump & Machinery Corp.: Ground has been broken at Succasunna, N. J., for a vertical turbine pump plant.

OVER

## 1,000,000 CUTTING TORCHES

*Demonstrate*

IT COSTS LESS TO  
OWN AND OPERATE



More than 1,000,000 VICTOR torches have been bought by the world's leading metalworking plants, shipyards, steel mills, foundries, scrap yards, welding shops, railroads, and others, for flame cutting all thicknesses of metal from light sheet to armor plate. Here's why so many prefer VICTOR cutting torches:

### 4 DIFFERENT VALVE LEVER POSITIONS

— Operator can choose position that "feels" right to him.

### CHOICE OF 90°, 75°, 45°, OR STRAIGHT

HEAD—all interchangeable, so you can quickly change from one to another as work requires.

### DIFFERENT TIP STYLES—each in several sizes,

so you may select the right tip to get maximum cutting speed and gas economy on your job for every application.

Standardize NOW on Victor for cutting and welding—it will cost you less. Ask your Victor dealer to show you.

# VICTOR

Welding and Cutting Equipment  
Since 1910

## VICTOR EQUIPMENT COMPANY

3821 Santa Fe Ave.  
LOS ANGELES 54

844 Folsom Street  
SAN FRANCISCO 7

1313 W. Lake St.  
CHICAGO 7



**American Tractor Corp.:** Production facilities are to be tripled by the addition of two 15,000-sq ft buildings.

**Florida Concrete Pipe Co.:** Offices are now at 330 S. Adams St., Tallahassee, Fla.

### Production

**Essick Mfg. Co.:** All equipment of their Sterling Machinery Corp. subsidiary has been transferred to Los Angeles.

**Straub Mfg. Co., Inc.:** License arrangement has been made with Sir. W. G. Armstrong Whitworth & Co., Ltd., England, to manufacture Kueken crushers. This company's territory will include Great Britain, Eire, Europe, South Africa, India, Pakistan, Australia, and New Zealand.

**Borg-Warner Corp.:** Andrew W. Rose is assistant general manager of the Warner Gear Div.

### Personnel Election

**Raybestos-Manhattan, Inc.:** George W. Marshall, Jr., and Alvin F. Heinsohn are elected vice-presidents.

**Byron Jackson Co.:** Carl Blom is elected a vice-president.

**The Ruberoid Co.:** E. J. O'Leary, formerly general sales manager, is now vice-president in charge of sales.

**Golden-Anderson Valve Specialty Co.:** Grant A. Colton is president.

**Fram Corp.:** Henry T. Parrett, manager of the Washington branch, is elected a vice-president.

**Automatic Steel Products, Inc.:** Curtis Franklin is chairman of the board of directors.

**Whitney Chain Co.:** James W. Anderson is vice-president in charge of sales, and C. Robert Powers is vice-president in charge of manufacturing.

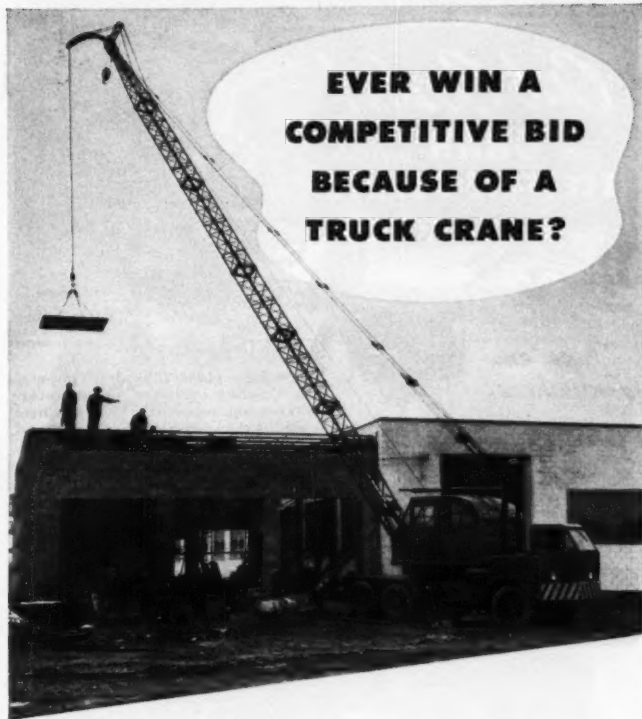
### Miscellaneous

**Zonolite Co.:** George E. Ziegler is research director.

**Lightweight Aggregate Equipment Co.:** Has been organized by Marietta Concrete Corp. and Besser Mfg. Co. to produce complete, lightweight aggregate plants. Executive and sales offices are in the First National Bank Bldg., Marietta, Ohio.

**A. Leschen & Sons Rope Co.:** L. H. Gault has retired as advertising manager after 45 yr of service with Leschen.

**The Black & Decker Mfg. Co.:** S. Duncan Black died suddenly of a cerebral hemorrhage. Cofounder of the firm, he was 67.



Here's one contractor who did! As an example of the advantages inherent in MICHIGAN Truck Cranes, Mr. Gurtzweiler of Henry Gurtzweiler, Inc., Toledo, cited a competitive-bid job.

Other contractors figured on the necessity of using a large crane with long boom to reach from outside a building being erected. Gurtzweiler, taking advantage of his MICHIGAN'S compact size and maneuverability, planned to work from a central point inside the building. Result? Henry Gurtzweiler, Inc. got the job . . . another of the many on which the MICHIGAN has given them a competitive advantage.

Moreover, Mr. Gurtzweiler states that although the truck crane is five years old and never has had an idle day, it is still in perfect condition and has had very little maintenance. Why settle for less? Next time you need a truck crane . . . get a MICHIGAN!

## MICHIGAN POWER SHOVEL COMPANY

495 Second Street, Benton Harbor, Michigan, U. S. A.

# Cut Costs!

with **ONAN** portable  
**ELECTRIC PLANTS**



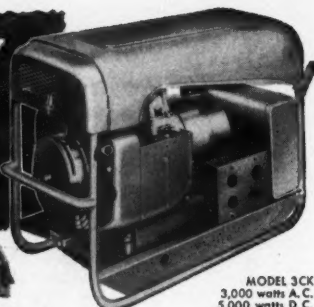
*Take 'em  
Anywhere!*

Increase your profits by using fast-working, cost-cutting electric tools on every job, even where highline power is not available. Lightweight, sturdy, Onan engine-driven electric plants supply instantly-available power anywhere for lights, drills, saws, pipe-



threaders, planers, spades, tampers, repair-shop tools and other motor-driven equipment. Carry 'em, wheel 'em, or truck 'em right to the spot and plug in for all the power you need. Equipped with carrying handles or dolly-mounted.

Lightweight Air-Cooled Models: A. C.—400 to 3,000 watts. D.C.—750 to 5,000 watts. Heavy-duty models to 35,000 watts.



MODEL 3CK  
3,000 watts A.C.  
5,000 watts D.C.  
with carrying frame  
or dolly-mounted



*Write for Free Folder!*

**D. W. ONAN & SONS, INC.**

6776 University Ave. S. E., Minneapolis, Minnesota



## Sink Tubes Fast For Tunnel At Norfolk

(Continued from page 53)

crete is tremied to encase the joint completely.

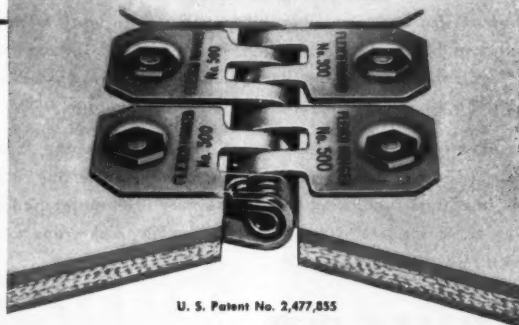
After the joint is poured, 10½ ft of sand backfill is placed in the trench around the tubes. Ordinary backfill is then dumped on top of the sand until the tubes are covered with a minimum 5-ft layer of material.

• **Shore connection**—Tube placing began at the Berkley end and is continuing across the river toward Portsmouth. At Berkley, connection to the cut-and-cover section will be in the dry, with the water held out by an earth dike dumped over and around the land end of the tube. Dike top thickness, along tunnel centerline, is 140 ft.

At Portsmouth, connection will be under water. Here, the first cut-and-cover sections will already have been completed in the dry, and will have been bulkheaded at the water end. Into this end will be built a sliding ring joint to connect to the last tube and allow for any variation in over-all length. A dike that holds the river out during work in the dry will be removed, and the tube floated in and hooked on to the retracted sliding joint. The one remaining tube, sixth in position but last to be placed, will be lowered and joined to the fifth tube. Then the shoreward tube will be dragged back to meet it and make final closure.

Time limitations and site conditions dictate the Portsmouth connecting procedure. If it were done in the dry, as at Berkley, construction of a section of cut-and-cover tunnel would be delayed until all the tubes were placed. As for the out-of-sequence sinking of the last two tubes, shallow water prevents the connecting one from being floated over the next one out. And it can't be brought in from the side, either, for part of the connecting tube extends inshore in a built-up area where its trench must be sheeted to prevent subsidence of adjoining ground.

*... the new separable*  
**FLEXCO HINGED  
BELT FASTENERS**



U. S. Patent No. 2,477,855

- ✓ For joining grader, trencher, ditcher and other earth moving conveyor belts.
- ✓ For belts ¾" to 1½" thick.
- ✓ A FLEXCO fastener that is HINGED. Has removable hinge pin.
- ✓ Troughs naturally, operates through take-up pulleys.
- ✓ Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

**FLEXIBLE STEEL LACING CO.** 4699 Lexington St., Chicago 44, Ill.

This necessity for a sheeted trench, 47 ft wide and as much as 30 ft below water, complicates the job mightily. The trench must be braced below water level, and the tube submerged and pulled in beneath the bracing. There will be less than 8-ft clearance between the struts and the top of tube in its final position.

• **Trench sheeting**—Sheeting for the wet trench is unusual. Extremely strong, yet simple, it consists merely of a series of 36-in. 160-lb WF beams alternating with 30-in. 108-lb WF beams, all driven vertically as piles. Webs of the 36-in. beams, or master piles, are perpendicular to trench centerline; those of the 30-lb intermediate piles are parallel to it. Thus, the latter sections are held behind the flanges of the master piles. Penetration is 26 ft below ultimate trench bottom and piles are up to 105 ft long.

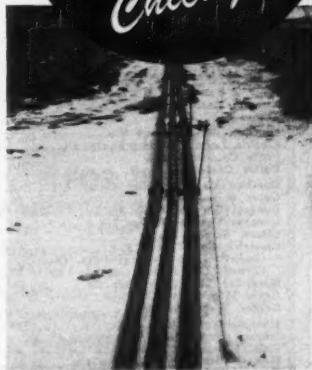
Driving these super sections is terrific work. They are guided by a templet made from an old cofferdam bracing set, and are driven by McKiernan-Terry 11B3 hammer riding a spud lead handled by derrick boat. Progress averages only 6 of the long piles per 8-hr day.

• **Crossing data**—The tunnel is part of a 1¾-mi bridge-tunnel expressway being built for the Elizabeth River Tunnel Commission. Norfolk's Tidewater Construction Corp. and New York's Merritt-Chapman & Scott Corp. have a joint contract for the project in the neighborhood of \$17,000,000. Tidewater is building a 2,000-ft, 4-lane bridge with bascule span over the Elizabeth's East Branch from downtown Norfolk to Berkley, and all tunnel approaches; MC&S is putting in the tunnel under the river's South Branch. The entire bridge-tunnel project is scheduled for completion next year.

For Merritt-Chapman & Scott Corp., Burton F. Sanders is project manager, working under William Denny, vice-president in charge of the firm's Marine & Heavy Construction Division, and Ralph E. DeSimone, executive vice-president and general manager. A. K. Burnham, Jr., is job engineer, and Don Youngman is office manager. Parsons, Brinckerhoff, Hall & Macdonald, New York, are consultants on the tunnel phase of the crossing, and are represented by George Murphy, resident engineer.



OIL  
for the  
"lamps" of  
Chicago



Chicago Daily News Photos

When lock repairs held up barge shipments of oil on the Illinois waterways recently, three 3200-foot lines of Naylor lightweight pipe worked around the clock to by-pass the locks and maintain the flow of oil and gasoline through shuttle barges into Chicago.

About 5,000,000 gallons daily were handled in this way during the emergency—just another example of the flexible and dependable service provided by Naylor pipe.

**NAYLOR PIPE Applications**—High and low pressure air lines. High and low pressure water lines. Ventilating pipe. Cement pumping pipe. Dredging pipe. Hydraulic sluicing. De-watering and drainage. Sand and gravel conveying lines. Well-point systems. Composite piling. Exhaust and intake piping.



**NAYLOR PIPE**

Naylor Pipe Company, 1268 E. 92nd St., Chicago 19, Ill.  
New York Office, 350 Madison Avenue, New York 17, N.Y.

# WHEN SPEED COUNTS



**SUPER-VULCAN  
OPEN TYPE  
DIFFERENTIAL-ACTING  
PILE HAMMERS**  
18C, 30C, 50C and 80C

**T**O drive piles fast you need jolting hammer blows delivered in rapid succession. You need Super-Vulcan! Delivering double the ordinary number of blows per minute, it socks piles down super quick to save you on time costs. And working on 25 to 35 per cent less steam, it gives you even greater operational savings.

Put Super-Vulcan to work for a faster start on any project, for on-time performance once you're underway. Its terrific power, plus many money-saving features, combine to give you the world's best all-round pile-driving job.

Remember, for plus-economy, open type Super-Vulcan fits same leads, uses same accessories as Single-Acting Vulcan. Write for details today.



Sizes: 18C—  
30C—50C—80C  
meet all needs.

**VULCAN IRON WORKS**  
EST. 1888

331 North Bell Avenue



Chicago 12 — — — Illinois

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AND CUTTING EDGES  
of Superior Quality by

**Shunk**

For all makes and  
types of road  
building and road  
maintaining ma-  
chines. Also —

**BULLDOZER BLADES  
BUCKET LIPS  
PATENTED  
SCARIFIER and  
ICE and SNOW  
REMOVAL BLADES  
MOLDBOARDS  
SCARIFIER TEETH**

All widths, lengths,  
and thicknesses;  
securely punched  
to fit your make of  
machine.

Write for bulletins  
and other informa-  
tion.

**Shunk**

**MANUFACTURING  
COMPANY**

Established 1890  
BUCYRUS, OHIO

## WHERE TO BUY

Featuring Additional Products,  
Specialties & Services for  
the Construction Industry

**MAINCO  
DISTANCE  
MEASURING  
WHEEL**



**ONE  
MAN  
and a MAINCO  
can beat**

**2 MEN WITH A CHAIN**

Send for descriptive folder today

**THE MAINTENANCE CO., INC.**  
Dept. B, 453 W. 42nd St., New York 18, N.Y.

## STOP that WATER

WITH FORMULA NO. 640. A clear liquid which pene-  
trates 1" or more into concrete, brick, stucco, etc., seals  
— holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts  
costs: Applies quickly—no mixing—no cleanup—no furring  
—no membranes. Write for technical data—free sample.

Haynes Products Co., Omaha, Neb.



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BOX NUMBERS in care of any of our New York, Chicago or San Francisco offices count as one additional line in undisplayed ads.

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## REPLIES (Box No.):

Address to office nearest you  
NEW YORK: 330 W. 42 St. (18)  
CHICAGO: 550 N. Michigan Ave. (11)  
SAN FRANCISCO: 68 Post St. (4)

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WANTED: HARBOR and Port Engineer. Beginning salary \$5306 per annum advancing to \$5906 per annum. Applicants must have 5 years of engineering experience including 5 years of harbor work. Maximum age 50. Write City Service Commission, City Hall, Milwaukee, for announcement and application.

## POSITION VACANT

GENERAL SUPERINTENDENT WANTED. Must be familiar with Pennsylvania Department of Highways procedure. Give references, experience, and salary expected in first letter. P-9566, Construction Methods & Equip..

## ENGINEER

### With Executive Experience

Position as Estimate-Manager of construction for building division of young and progressive company doing business in the Southern area. Duties: Estimating, organizing building division, general supervision of construction. Excellent opportunity for man with ability. Reply with all pertinent details, such as experience, recommendations, and so forth.

P-8852, Construction Methods & Equipment  
330 W. 42 St., New York 18, N. Y.

## WANTED TO BUY USED CEDAR RAPIDS MODEL FA PORTABLE ASPHALT PLANT

(2500# CAPACITY)

PAVIMENTOS, S.A.

P.O. Box 10,100, Mexico 4, D.F.

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### Opportunity Advertising

—to help you get what you want.  
—to help you sell what you no longer need.

Take Advantage Of It

For Every Business Want

"THINK SEARCHLIGHT FIRST"

**"FASTER FROM FOSTER"**  
**RAILS** NEW AND RELAYING  
**RENTAL PILING**  
STEEL SHEET  
• Five complete warehouse stocks assure you of the exact requirements for all your job needs. Largest stocks in U.S. of Relaying Rails and Rental Steel Sheet Piling. Also complete Track Accessories. Pile Hammers and Extractors for rent. Write for Catalog.  
**TRACK ACCESSORIES • PIPE • WIRE ROPE**  
**L.B. FOSTER CO.**  
Pittsburgh 30, Pa. New York 7, N. Y.  
Chicago 4, Illinois Houston 2, Texas

"Caterpillar" D8 Tractor, Serial No. 2U4030, with LeTourneau FP Scraper. Unit used less than 3000 hours. Excellent condition.

## HOBSON AND COMPANY

"Caterpillar" Distributors

Phone: Harrison 6615

2131 WASHINGTON STREET  
KANSAS CITY, MO.

## FOR RENT

Motor Truck Cranes 20 ton capacity

2—Bay City—1 Lorain

100 foot boom—15 foot jib

Semi Trucks—Winch Trucks

Derrick Trucks—Low Boy Trailers

Air Compressors—Portable Welders

**L. I. GRIFFIN & SONS, INC.**

5002 S. Hanna St., Ft. Wayne, Ind.

Phone H-3295

**10,000 U.S.Q.M.C. "JEEP" CANS**  
5 Gal., for Oil—Gasoline, etc. Brand New! Heavy gauge steel. O.D. screw-top (lots of 100 ea.) \$2.65.  
QUANTITY BUYERS WRITE FOR DISCOUNT ALSO (WATER) JEEP CANS. NEW \$3.50

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723 WALNUT, KANSAS CITY 6, MO.  
Write for Catalog—Over 500 Bargains

## FACTORY CLOSE OUT CRITICAL MATERIAL

BRAND NEW  
PORTABLE  
MULTI-USE  
**POWER  
SAW**



SAVE  
\$300  
WAS \$499.00  
NOW \$199.00

FOR MINNEAPOLIS, MINNESOTA

America's greatest saw bargain! Cuts lumber to 4" thick. Briggs & Stratton  $\frac{3}{4}$  H.P. gas engine. Saw cuts flue lining. transite pipes, steel sheets, copper & aluminum, etc. Does work of \$1,000 worth of saw equipment. Sharpens tools. Famous make, brand new, original crates. Limited supply. Send for literature. Dept. CM-5

At 1281

**ENNIS SUPPLY CO.**

314 1st St. N., Minneapolis 1, Minn. U.S.A.

2—568 Ingersoll-Band Jackhammers for 1 in. hex steel

1—Ingersoll-Band No. 34 Drill Sharpener with shanking tools. Bit punch for sharpening 1 in. hex steel.

Subject to prior sale

**METAL & THERMIT CORPORATION**

John W. Adams, Agent

ROSELAND, NELSON CO., VA.

1—101' Single Well 3 wheelbarrow, American Tuber Hoist Tower complete with 40 HP 3 Drum Hoist, also concrete bucket. Used 7 months. Price \$2300.00

1—79' Single Well 3 wheelbarrow Tower complete with 40 HP Double Drum Hoist—\$2250.00 Subject to prior sale. F.O.B. Buffalo, N. Y.

**J. H. WELCH CO., INC.**

P. O. Box 27, So. Park Station, Buffalo 20, N. Y.

Split . . . a . . . second  
the ROCKMASTER way

and you get  
**Controlled**  
**Blasting**



**ROCKMASTER "16"**  
**TIMINGS**

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

**T**HE ROCKMASTER blasting system offers you a choice of sixteen split-second delay detonators. Fit the right ones for your job into the complete system—including the correct explosive, drilling pattern and loading procedure—and you've got the key to a smooth flow of blasting power that can mean true

*controlled force . . . controlled throw . . . controlled breakage.*

We help you tailor the system to fit your requirements, often with substantial savings in drilling and dynamite, too.

ROCKMASTER may be the answer to your problems whether you blast coal, rock, ore . . . on the surface or underground. Write for your free copy of the ROCKMASTER "16" booklet that includes diagrams of typical loading in quarries, strip pits, mines, and many types of construction.

ROCKMASTER: Reg. U. S. Pat. Off.

**ATLAS** EXPLOSIVES  
"Everything for Blasting"



ATLAS POWDER COMPANY, Wilmington, Del. • Offices in principal cities • Cable Address—Atpowco

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# Give Him a Power Saw He'll Like



**Stanley  
W9  
Safety  
Saw**

(at 45°)

Here's a fast, heavy-duty saw designed especially for the kind of hard use customary on heavy building construction. Its easy cutting action through heavy lumber makes a hit with operators every time. The famous Stanley nameplate is recognized and respected the world over.

The Stanley W9 Safety Saw cuts through the toughest wood in any thickness up to 3½". Heavy-duty gears in large grease chamber assure continuous, smooth operation in any position. Precision ball bearings throughout. Simple, secure adjustments for depth-of-cut and beveling angles from 90° to 45°. Telescopic safety guard protects operator from cutting edge of blade. Supplied with sturdy metal carrying case and ripping gauge.

See the W9 Saw at your tool distributor's or write for detailed literature on the W9 or other Stanley Saws, to Stanley Electric Tools, 437 Myrtle St., New Britain, Conn.



**HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL**

# Methods Memo...

**THE PIPELINE NETWORK** built for the natural gas industry already tops the country's total rail mileage by 50,000. The present pipeline figure of 282,000 mi is far less important to contractors, however, than is the 26,500-mi increase made possible through government authorization of \$1,682,000,000 worth of natural gas facility construction. Still awaiting authorization is 12,700 mi of extension estimated at \$874,000,000.

**LATEST STUNT** to keep big off-road tires inflated properly is to fill them with water under recommended pressure and then seal the valve caps so operators can't reduce the pressure for easier riding. Water doesn't seep through tubes as does air, so tires stay up.

**AN EDUCATIONAL STEP** that more contractor groups would do well to follow was recently inaugurated by the Iowa AGC—they have established a scholarship in construction engineering. The first of the annual \$500 awards, at Iowa State College, will be made this spring. One qualification: The student must have had at least one summer's employment on construction work with an AGC firm.

**NEW YORK STATE** Labor Dept. is threatening to limit the length of crane booms on construction. We want to see some detailed figures on accidents resulting from too-long booms before we'll go along with this one. Wonder what they'd say about the 155-ft rig on page 59, this issue.

**STILL MAKING HISTORY**—After 6 years in Navy service at Apra Harbor, Guam, the grand old dredge *New Jersey* will soon be towed back through the Panama Canal to New Orleans, from whence she left in 1945 to enter the Navy. Built in 1927 at Manitowoc, Wis., for Standard Dredging Co., she started her illustrious career by filling in the Chicago World's Fair site, then went down

the Mississippi on levee work. Moran Towing Co., who hauled her out to Guam, is returning the dredge to her original owners.

**UNCLE SAM'S TAX COLLECTORS** can be tougher on a construction firm than can his engineers and inspectors. Mrs. Mary Louise Stringer found that out when she fell heir to Pittsburgh's Booth & Flynn Co. She had to sell the well-known contracting outfit, which had been in her family 75 years, for \$2,000,000 to cover the inheritance tax. New owner is Morris E. Lipsett of New York's Lipsett, Inc.

**A NEW LINE** of equipment will be in order if a development announced by Shell Oil Co. for rehabilitating asphalt roads takes hold. Shell proposes a plan to rip up old pavements, pulverize the salvaged material in the presence of a solvent, add a small proportion of new road oil, and lay the revitalized mix right back in place. Sure, we've got rippers, crushers, mixers and pavers, but maybe we can tie 'em all up together in a single traveling machine.

**SAFETY** is the watchword of the Connecticut State Highway Dept., which has gone to great lengths to protect its road workers. Latest schemes include: Free inoculations to help prevent poison ivy infections; and issuance of bright red hats, in winter and summer models, to make men more visible to passing drivers. The hat trick has been under test in extra-hazardous areas since 1949, was recently made state-wide.

**THE EFFECTS** of atomic blasts on structures and building materials of various kinds are being studied in a new series of tests at the Atomic Energy Commission's Eniwetok Proving Ground in the Pacific. Results may radically change present structural design criteria and pose new problems for the construction industry.

**LATEST** contractor organization to be formed is the Associated Railway Track Contractors of America, with offices in Chicago. Royce Kershaw of Montgomery, Ala. is the group's first president; John Deckert is secretary.

**YOU'D BETTER PAMPER** your construction equipment in these days of tight supply; otherwise you're likely to find your machines down, and no replacements available. Our Third Annual Special Equipment Maintenance Issue, coming in July, will help you take care of your present rigs and keep them working longer.

## CONSTRUCTION METHODS AND EQUIPMENT

May 1951



### On the Cover . . .

ON ROUTE 1 near Danvers, Mass., a Jaeger-Lakewood concrete finisher of Central Construction Co., Lawrence, gives the slab a final pass. The Type X machine is equipped with a transverse front screed and a diagonally adjustable rear screed that the operator can swing to best angle. When finishing pitched slabs and super-elevated curves, the working angle of the rear screed is turned to carry the right amount of material uphill and compact it solidly against the higher form. Both screeds have a wide range of oscillating speeds that are independent of travel speed. On this \$1,500,000 Route 1 extension, the machine is working behind a Ransome 34-E paver.





Filtration Plant, City of Edmonton, Alberta, Canada Engrs.—City Engineers Staff,  
Contr.—Poole Construction Co., Edmonton, Alberta

## Placeability, Durability for Thin Sections with **POZZOLITH CONCRETE**

Pozzolith, Cement Dispersion, proved particularly advantageous in the construction of this filtration plant with thin sections because it produced good workability *with reduced water*.

Good workability resulted in easy placing; reduced water provided minimized shrinkage, low permeability and great durability.

Investigate Pozzolith for your next job because: normal concrete of *any given quality* is produced at lower cost with Pozzolith than by any other means.

*Full data on Pozzolith will be sent on request.*



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**MASTER**



**BUILDERS**

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CLEVELAND 3, OHIO

TORONTO, ONTARIO

300,000 YARDS  
maintenance  
still too low  
to be figured



President Walt Dunham and Engineer A. Bruce Lattanzi in the company's Downsville Dam office.



Two 500' Worthington Blue Brute Air Compressors supplying air for drills at the Downsville Dam.



Two of the eight Worthington Blue Brute Wagon Drills that broke cost records for Rock Construction Corporation. Note the amount of line drilling.

Line drilling in blue stone is child's play to those Worthington Blue Brute Wagon Drills.

Rock Construction Corporation of Kingston, New York, working on the Downsville Dam weir and waste channel, got service out of eight wagon drills that constantly amazed them.

Walt Dunham, president, reported: "We have drilled as much as 700-800 feet per 8-hour day per machine. In 165 working days, the machines put out 300,000 cu yds with so little maintenance it can't be figured in cost per yard."

This job also used a number of Worthington Blue Brute Hand-Held Rock Drills. Says Mr. Dunham: "There has been absolutely no maintenance cost. Our operators like them better than anything they have ever used."



Worthington Blue Brute Rock Drill operating ahead of the wagons collaring hole for laying out line drilling.

Contractors everywhere know that a Worthington Blue Brute team—air compressor and tools—makes mincemeat out of even the toughest jobs. See your nearby Worthington distributor for a demonstration. Worthington Pump and Machinery Corporation, Construction Equipment Division, Dunellen, N. J.

# WORTHINGTON

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H.1.5



**IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB**